

FOREST PROTECTION INITIATIVES AND NATIONAL FOREST POLICY

HEARING BEFORE THE SUBCOMMITTEE ON PUBLIC LANDS AND FORESTS OF THE COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

TO RECEIVE TESTIMONY ON THE INTERACTION OF OLD-GROWTH
FOREST PROTECTION INITIATIVES AND NATIONAL FOREST POLICY

OCTOBER 2, 2001



Printed for the use of the
Committee on Energy and Natural Resources

U.S. GOVERNMENT PRINTING OFFICE

78-036 PDF

WASHINGTON : 2002

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512-1800; DC area (202) 512-1800
Fax: (202) 512-2250 Mail: Stop SSOP, Washington, DC 20402-0001

COMMITTEE ON ENERGY AND NATURAL RESOURCES

JEFF BINGAMAN, New Mexico, *Chairman*

DANIEL K. AKAKA, Hawaii	FRANK H. MURKOWSKI, Alaska
BYRON L. DORGAN, North Dakota	PETE V. DOMENICI, New Mexico
BOB GRAHAM, Florida	DON NICKLES, Oklahoma
RON WYDEN, Oregon	LARRY E. CRAIG, Idaho
TIM JOHNSON, South Dakota	BEN NIGHTHORSE CAMPBELL, Colorado
MARY L. LANDRIEU, Louisiana	CRAIG THOMAS, Wyoming
EVAN BAYH, Indiana	RICHARD C. SHELBY, Alabama
DIANNE FEINSTEIN, California	CONRAD BURNS, Montana
CHARLES E. SCHUMER, New York	JON KYL, Arizona
MARIA CANTWELL, Washington	CHUCK HAGEL, Nebraska
THOMAS R. CARPER, Delaware	GORDON SMITH, Oregon

ROBERT M. SIMON, *Staff Director*

SAM E. FOWLER, *Chief Counsel*

BRIAN P. MALNAK, *Republican Staff Director*

JAMES P. BEIRNE, *Republican Chief Counsel*

SUBCOMMITTEE ON PUBLIC LANDS AND FORESTS

RON WYDEN, Oregon, *Chairman*

DANIEL K. AKAKA, Hawaii	LARRY E. CRAIG, Idaho
BYRON L. DORGAN, North Dakota	CONRAD BURNS, Montana
TIM JOHNSON, South Dakota	PETE V. DOMENICI, New Mexico
MARY L. LANDRIEU, Louisiana	DON NICKLES, Oklahoma
EVAN BAYH, Indiana	GORDON SMITH, Oregon
DIANNE FEINSTEIN, California	CRAIG THOMAS, Wyoming
CHARLES E. SCHUMER, New York	JON KYL, Arizona
MARIA CANTWELL, Washington	RICHARD C. SHELBY, Alabama

JEFF BINGAMAN and FRANK H. MURKOWSKI are Ex Officio Members of the Subcommittee

JOHN WATTS, *Counsel*

FRANK GLADICS, *Professional Staff Member*

CONTENTS

STATEMENTS

	Page
Bisson, Henri, Assistant Director, Renewable Resources and Planning, Bureau of Land Management, Department of the Interior	14
Bonnicksen, Dr. Thomas M., Professor, Department of Forest Science, Texas A&M University, College Station, TX	
Collins, Sally, Associate Chief, U.S. Forest Service; accompanied by Robert Lewis, Ph.D., Deputy Chief, Research and Development; Mike McClellan, Ph.D., Russ Graham, Ph.D., and Curt Kotchak, Ph.D., Vegetation Research Ecologists, U.S. Forest Service	18
Craig, Hon. Larry E., U.S. Senator from Idaho	8
Daucsavage, Bruce, President, Ochoco Lumber Company, Prineville, OR	65
DeFazio, Hon. Peter, U.S. Representative from Oregon	3
Franklin, Jerry F., Professor of Ecosystem Analysis, College of Forest Resources, University of Washington, Seattle, WA	
Johnston, James, Co-Director, Cascadia Wildlands Project, Eugene, OR	58
Palola, Eric S., Director, Northeast Regional Office, National Wildlife Federation	53
Smith, Hon. Gordon, U.S. Senator from Oregon	30
Torgerson, John, Alaska State Senator and Chairman, Committee on Natural Resources, Alaska State Senate	70
Wyden, Hon. Ron, U.S. Senator from Oregon	1

FOREST PROTECTION INITIATIVES AND NATIONAL FOREST POLICY

TUESDAY, OCTOBER 2, 2001

U.S. SENATE,
SUBCOMMITTEE ON PUBLIC LANDS AND FORESTS,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:35 p.m. in room SD-366, Dirksen Senate Office Building, Hon. Ron Wyden presiding.

OPENING STATEMENT OF HON. RON WYDEN, U.S. SENATOR FROM OREGON

Senator WYDEN. The subcommittee will come to order. Today the subcommittee opens an important inquiry that I hope will end with strong protections for old-growth trees, healthier forests, and better ways of managing those forests for all Americans.

Let me be clear about my own sense of where today's discussion of old-growth ought to go. Absent compelling forest health concerns, it is time to end logging on our ancient forests. My concept of forest management accepts a simple fact: Some things are too important to mess up. Our ancient forests are at the top of that list.

I do feel that there are several absolutely essential components for an old-growth protection effort. It must be accompanied by management across the entire forest ecosystem. That includes a substantial thinning program, multiple use, and watershed restoration.

From the beginning, the debate about old-growth has been highly polarized. We have some on one hand who would punish the Forest Service for not cutting enough trees. On the other, there are those who would stand in the way of all commercial use of our forests. Those uses are critical to stabilizing and promoting the health of those forests.

I pursued county payments legislation with Senator Craig here in the U.S. Senate. Congressman DeFazio, of course, is the leader in the House on this issue, and we were working to lighten the economic load carried by timber-dependent communities and widen the way for a real discussion of a creative new approach to forest management. County payments are just one example of how the logjam over forest policy can be broken, providing for the ecological health of the forest and ensuring survival for resource-dependent rural communities.

Forest Chief Mike Dombeck called that county payments law the most important forestry law in 40 years. Today, I say the sub-

committee can develop old-growth policy initiatives that might be the most important forestry work for the next 30 years.

For decades, my home State has been a hotbed of contentious debate over forestry. In those 20 years, the fights over timber have become increasingly acrimonious. In 1984, the implementation of the Northwest Forest Plan tried to address questions of supply for the industry and protect old-growth, there were over a dozen pending lawsuits over the northern spotted owl, the marbled murrelet, and the possibility of future timber harvests from old-growth. Those same fights with respect to old-growth harvesting exist today, 17 years later, heightened by years of argument.

I would submit that arguments over the treatment of old-growth exist partly because there is not even basic agreement in our country about what constitutes old-growth. What a southerner calls old-growth and what an Oregonian calls old-growth may be two completely different matters. One of the responsibilities of this subcommittee is going to be to look beyond immediate disagreements and address fundamental questions that continually fuel the fires of the old-growth debate.

To date, the Northwest Forest Plan is the sole template for old-growth protection. Covering 21 million acres of Federally managed forests spread across 18 national forests and several Bureau of Land Management districts, the Northwest Forest Plan offered unique challenges in terms of forest management, not just for communities, not just in protected lands, but in understanding that the two are deeply interconnected.

The design of the plan was supposed to allow forest managers flexibility to explore the connections between forest lands and forest communities so as to provide benefits to both. By recognizing that not all forest land is the same, but recognizing that the best use of some forest land is to benefit resource-dependent communities, and by recognizing that some should be preserved for its uniqueness and rarity, the Northwest Forest Plan sought to expand understanding of forests and improve management of them.

This hearing is meant to explore the knowledge that is available with respect to old-growth, the effectiveness of the methods that have been used, and the potential of methods that have not yet been tapped. Old-growth is important first and foremost simply because there is relatively little old-growth left to protect. Additionally, if old-growth areas are lost it is not simply a matter of losing ancient trees. Within our old-growth stands are unique specialized plants and trees that simply do not exist outside old-growth, animals that depend on old-growth stands for habitat and sustenance. The bottom line: we lose our old-growth stands, we lose a special world with them.

Old-growth has to be managed in conjunction with late successional forests. Trees which are young today will not simply grow older and recreate old-growth habitats.

After much listening and after many long discussions with those on all sides, we are going to make it clear that we intend to reject those who would take an extreme position on this issue. The challenge is to come up with a creative path, a new strategy that interweaves environmental concerns with social and economic ones in order to ensure healthier forests and ecosystems.

Development of new and creative strategies to both protect old-growth and sustain timber-dependent communities is going to be heavy lifting. It is going to demand something of all of the stakeholders. It is my intention, working in conjunction with Senator Craig, who has been extremely cooperative with me on these matters, to sit down and look for an honest exchange of ideas and find solutions.

When we say stakeholders, we are talking about more than environmental interests and timber interests. We are talking about the concerns of the old-growth Forest Service, the Bureau of Land Management, the Fish and Wildlife Service, the National Marine Fisheries Service. We need their expertise and commitment in order to have effective management of our forest ecosystems.

I want to make it clear at the outset that I am willing to work with anyone and everyone who is truly committed to protecting old-growth as part of a larger plan to restore forest health. This is going to be an effort to try to end the bickering and ulterior motives and the parochial agendas that have dominated this issue and at the end of the day to make sure that, with strong protections for old-growth trees, we have a healthier forest and a better way of managing the forest for all Americans.

We are going to start the productive and lively discussion that this issue will surely generate with an excellent panel of witnesses. We are very fortunate to have one of Congress' true forestry experts, Peter DeFazio from the Fourth District, where these issues generate about as much passion as anywhere on the planet. He will begin our presentation.

Then we are going to have Henri Bisson from the Bureau of Land Management, Sally Collins from the Forest Service, Jerry Franklin from the University of Washington, Dr. Tom Bonnicksen of Texas A&M, Eric Palola of the National Wildlife Foundation, Jim Johnston of Cascadia Wildlands Project, Bruce Daucsavage of Ochoco Lumber, and John Torgerson of the Alaska State Legislature.

Let me make it clear to our witnesses, we will put their prepared remarks into the record in their entirety and know that it is almost a biological compulsion to read every word that is on paper in front of you, but we will put that in the record, and if our witnesses could highlight their principal concerns that would be helpful.

Peter, I am especially glad you are here. You have taught me an awful lot about these issues during my service in the Congress and it is appropriate we begin with you.

**STATEMENT OF HON. PETER DeFAZIO,
U.S. REPRESENTATIVE FROM OREGON**

Mr. DEFAZIO. Thank you, Mr. Chairman. I can say indeed it is a pleasure to be here today. It is not often in the past that I have talked about wading into the contentious issues of forest management as a relief from my normal duties, but I have been totally immersed in aviation and aviation security issues for a couple of weeks and it is good to get a little perspective on other issues that are very important to my constituents and to our country.

When I was first elected to Congress in 1987, I had a conference that I put together. I thought, if only we could put the issue of for-

est management far enough into the future, perhaps we could try to find common ground and get people to agree on what they would like our forests to look like 20 or so years from now. So I put out a conference call to "Our forests in the year 2010." Among the participants was the then chief forester, but also Jerry Franklin made one presentation. I had one memorable panel which included both Andy Kerr and Chris West.

It became clear that, even if we put the debate out 23 years, there was still a very vigorous debate and disagreement. I believe that today, getting close to that time, there is actually more grounds for common agreement. In part, they come from the failures of the Northwest Forest Plan.

The Northwest Forest Plan certainly imposed some order on chaos. We had basically the entire system under one form or another of court management or injunction. There was certainly on the part of the last administration an attempt to bring together some of or many of the diverse parties and try and put in place a plan that would provide some protection for those things which we wished to protect and to provide some predictability for those who were dependent upon forest resources for their living.

Unfortunately, I think there were some fatal flaws inherent in that, and others what follow me perhaps will address those with more specificity, but let me give my lay person's view of the issue.

I remember, again, talking to Dr. Franklin back then and said, you know, I do not quite understand, Jerry. If we draw a line around a late successional reserve, which is a previously managed second growth area tree plantation, what do you get in 20, 40, 50, or even 100 years? His response was: You get dog hair, dog hair being not a functioning old-growth-like forest ecosystem or even a mid-range sort of forest system, but actually something that is unnatural, planted to unnatural densities, with very little understory and diversity, actually in some cases you could almost say sort of a biological desert.

That has, unfortunately, given what has proven to be fatal flaws and inflexibility, the current status of where many late successional reserves covering hundreds of thousands of acres are headed. I have a particular concern with the Coast Range in Oregon and some in Oregon and northern California, but particularly in Oregon, where there are tens of thousands of acres that are at a critical point to go in and thin. If the only value were to manage those forests to be future old-growth, you would still have to go in there and conduct this thinning.

But if you miss a critical window to do the thinning, the trees will get too tall, particularly in areas where you have high winds, and if you did the thinning 10 or 15 years too late you are likely to get a lot of blowdown and you have missed, obviously, that which could have been captured in the interim period.

The Forest Service has very little money to conduct these sorts of what would be called restoration forestry sales and/or restoration forestry practices, and they are falling further and further behind on the thinning.

Now, the issue obviously becomes, there is built-in distrust here. There is the distrust that many environmental groups have for the management agency or the industry. There is certainly folks in the

industry who feel like they were burned by the Clinton forest plan and the promises of some predictability there. We have got to get past that, and you are going to hear from some folks today who are trying to develop a path past those old disagreements and kind of what I would call old business.

I really think there is something here that we can all grasp if this is done properly, Mr. Chairman, and if we were to get into or go into some of these late successional reserves, not on a necessarily standard prescription, but to really enhance their long-term viability as functioning forest ecosystems, to speed their movement toward more old-growth-like characteristics and the diversity that comes with that, there would also be a significant amount of viable commercial product that would come out of those areas.

One thing that I suggested to the last administration, to Assistant Secretary Lyons from his first day in office, or maybe before his first day in office, was I was really interested in the idea of moving away from selling timber on the stump to contract logging under the direction of the Forest Service, in which case you could have a lot more control over what happens in a given area so that you do not get trees cut that were not supposed to be cut and you can do the prescriptions as you wish, bring the logs out to a sort yard as the industry does, sort them by age, species and type, and then sell them from the sort yard for a much higher value, rather than selling someone something that is 30 percent hemlock who only wants fir and then they are going to bid lower and then they are going to resell it. It becomes very inefficient, plus you lose the control over the forestry practices and it assumes more of the aspect of a commercial timber sale, even if you are doing restoration forestry, than under a contracted logging and removing the product to sort yards for sale.

I think—and you will hear from people, again, much more qualified than I who have looked at—and I have asked recently with a letter I directed from some members of the House to the Chief to get some quantifiable numbers on what might be available and over what period of time, what budgetary requirements we would need.

But I think what you will find is for people like Ochoco Lumber, people you will hear from later today, people who have done what we were encouraging the industry to do—move away from your old-growth, adopt more efficient practices, look toward a sustainable supply of second growth timber—that we can probably project out 20 years, which for many folks would be very desirable, with some degree of certainty how much could be available, how much timber could be available, while at the same time we are managing the forests for environmental purposes, restoration forestry purposes, and critically, as you mentioned earlier, moving out of old-growth timber sales.

That is the continuing bone of contention and we are still tied up in the courts like we were in the early nineties. So I think there is really the possibility of tying together a package here which could have broad support, both from the industry, environmental groups, and policymakers.

There are some specifics that will have to be worked through in terms of how can we assure, even if we are moving toward restoration forestry and thinning over these hundreds of thousands of acres of second growth in LSR's, that it is being done properly? You would have to build in certainly the protections of the reviews there.

But also, what sort of agreement can we come to over the criteria that will be used so that they cannot, if there is broad agreement, as you said, be tied up by someone on the extreme from even moving forward on something that everybody admits would have environmental benefit and provide a commercially viable product?

These are yet difficult questions to be worked through and with sort of the historic distrust, it will be a little bit difficult. But I appreciate the chairman's leadership with this subcommittee and would look forward to working with him and his staff and other interested members, the gentleman from Idaho and others, on moving forward from this point.

I think we have an opportunity here, and I did not even touch on the issues of fire and things where again there is potential for some predictability and restoring forest health and removing a viable product. But I believe that is going to be the subject of a future hearing.

[The prepared statement of Mr. DeFazio follows:]

PREPARED STATEMENT OF HON. PETER DEFazio, U.S. REPRESENTATIVE
FROM OREGON

Mr. Chairman, in 1993, as part of the Clinton Administration's Northwest Forest Plan, large tracts of previously harvested timberland were set aside as Late Successional Reserves (LSRs). The purpose of establishing these reserves was to develop late successional forests, more commonly known as old growth. At that time, I raised concerns about simply drawing lines around large tree plantations without developing a comprehensive plan to manage the resulting protected forest. I asked University of Washington forest scientist, Jerry Franklin, what would become of the newly protected areas in one hundred years? He informed me that those plantations would develop into "dog hair." Mr. Chairman, if you have ever seen a forest that looks like dog hair, you'll know that it is not really a forest at all. But "dog hair" forests are what we are quickly developing in many Northwest LSRs. These reserves could play an important long-term role in regenerating late successional forest conditions, but they need to be effectively managed to achieve that goal.

In May of this year, I participated in a field trip with Regional Forester Harv Forsgren, along with a team of district rangers and forest scientists, to examine the effects of tree thinning within LSRs. I was very impressed by what I saw. In the untreated stands, trees stand at a density of about two hundred to four hundred per acre—the "dog hair" conditions of which Mr. Franklin spoke, and I was concerned about, over eight years ago. The trees are small in diameter—many less than ten inches—without full, healthy crowns. In addition, the forest is nearly devoid of under-story foliage. The lack of sunlight and nutrients reaching the forest floor has created a "biological desert" where there should be species of hemlock, maple, alder, salmonberry, and numerous other plants. By contrast, the study areas that have been thinned to approximately sixty trees per acre show signs of a healthy, functioning forest—larger trees, greater crowns, and a diverse collection of vegetation. In yet another area I visited, where scientists have thinned to thirty trees per acres, the positive effects appear even greater.

This is not to say that all LSRs should be uniformly prescription thinned to thirty trees per acre. We should rely upon good forest science to determine the best way to thin to improve the ecological health of the forest. Some of the latest research suggests that old growth forests began lightly stocked, then thickened into highly differentiated stands through seeding over about a twenty-year period. Some heavily crowded stands may have to be prescription thinned, while others will be thinned very selectively. Whatever the method, the ultimate goal is to enhance forest health and develop old growth.

LSR thinning is also linked to the Northwest's old growth forests in another important way. When the Northwest Forest Plan was first proposed, one of my primary objections was that it would fail to resolve the region's forest management controversies. The reason was simple: much of the plan's timber sale volume came from old growth stands and roadless areas that were not included in reserve areas. During the development of the forest plan, I advocated a reasonable management option that would have helped resolve the disputes about cutting old growth forests by logging primarily in second growth stands while reserving many old growth stands. Unfortunately, after hundreds of hours of secret meetings, the Clinton Administration did not consider any proposals that incorporated the alternative management policies I advocated. As a result, we are still faced with highly controversial old growth timber sales in the Pacific Northwest.

The goal of LSR thinning is the restoration of late successional forests. However, LSR thinning will incidentally result in marketable timber. According to preliminary estimates, the amount of board-feet recovered from thinning operations would be significant in meeting our wood products needs and possibly keep open struggling sawmills, which are vital to the economy in many depressed Northwest communities. By shifting the focus of the Forest Service away from controversial timber sales and toward needed thinning operations, we can rescue many family wage jobs while improving forest health and developing protected old growth.

To better manage the wood byproduct of LSR thinning operations, I have proposed establishing Forest Service run sort-yards. Contracting the logging operation without selling the standing trees will achieve a more suitable thin, and help to alleviate some concerns about thinning. Contract logging will allow the Forest Service to decide what trees are to be removed to achieve the greatest ecological benefit, as opposed to a timber company having a direct financial interest in the size and species of harvested trees. Once in the yard, the trees can be sorted by size and species and auctioned off to the highest bidder. The private sector has run similar sort-yards for years to bring about the maximum utilization of trees harvested and maximum returns.

I have been encouraged by the support from environmental groups, the timber industry, the Forest Service, and the scientific community for all of these ideas. Thinning within LSRs, protecting old growth, and using Forest Service run sort-yards provide a desirable outcome for all interests. We have a unique opportunity to bring all these groups, who have at times been at bitter odds, together to achieve healthy old growth forests.

I have recently been joined by a number of my colleagues from the Northwest in sending a letter to the Chief of the Forest Service, Dale Bosworth. In the letter, my colleagues and I request a range of information from the Forest Service about the environmental and economic benefits of LSR thinning; the result if thinning is not completed; and the resources necessary to complete the thinning operations. Once the Forest Service responds to our letter, it is my hope that we can begin to address the needed thinning of LSRs through the legislative and appropriations processes.

Senator WYDEN. Well, Peter, thank you for an excellent, excellent statement. I am going to let Senator Craig begin with both his opening statement and any questions for you.

Senator Craig, before you came I made mention of the fact that I was especially proud that we showed in the last session of Congress, when everybody would have said no way and no-how could the two of us come together on something like county payments.

I wanted to see us really swing for the seats again. I think that there is a chance, as Congressman DeFazio has mentioned, this afternoon to come up with something that would ensure millions and millions of board-feet for our mills, with a substantial thinning program, old-growth protection, reform of forest management practices, which, having sat by you for several years now, you have made a very good case for.

I want to let you begin both the statement and questioning of Congressman DeFazio by way of saying that I want us to go back to the same spirit we did last session on this issue, because I think we could do something like that bill last session that would also

pay dividends for another 30 years. Why don't you proceed in any way you choose?

**STATEMENT OF HON LARRY E. CRAIG, U.S. SENATOR
FROM IDAHO**

Senator CRAIG. Mr. Chairman, thank you.

Congressman, thank you for being before the committee today to talk about an issue in the whole of the concept of our forest management that is of very real importance. I must tell you, when I think of old-growth and someone talking about preserving it, I guess it is in my mind an oxymoron. It is kind of like defying gravity. Old in a living thing ultimately is not old any more; it is a slab of carbon laying on the ground rotting.

That is a pretty blunt statement. I know that west side douglas fir have a different lifestyle than the climax forests of the inland West as it relates to lodgepole pine and all of that, but the ultimate factor is that certain trees die at certain times.

I am also a little nervous about continually finding new preserves or reasons to preserve. We just came out of a most contentious fight with a former President who tried to reserve some 60 million additional acres all in the name of roads or roadless areas by finding ways to greatly restrict access.

I understand what you and our chairman are trying to do and I am going to try to be cooperative in as many ways as possible. At the same time, when I look at your State and my State and the number of acres we have already set off-limits, for all the right reasons in most cases, I find it difficult for me to run to find another reason to set aside more acres.

I understand the frustration of the industry: Gee, this time if we support this maybe we will get an allowable cut. But I have heard that argument for 20 years as I have seen the allowable cut first move to half, then a third, and now hardly a representative portion of where we once were.

I am not sure what gives us the key to the right or reasonable forest management, balanced management, recognizing the need to thin, clean, create vitality on the forest floor for the purposes of wildlife and watershed, and even to produce a few sticks to build homes with in the end.

So I will listen with great curiosity and I am going to make every effort to work with my chairman to see if we cannot resolve this issue, because there are a good many things that the chairman and I believe in strongly, and that is the viability and the health of our public forested lands. I have grown to believe that unless you designate specifically, under the reality that we are going to let Mother Nature be the sole manager of certain portions of the resource, as we have determined with wilderness and other designations—I guess my ultimate question would be, if you establish old-growth preserves and they become designated areas for their uniqueness and they are swept and cleaned by fire, would there be a willingness to undesignate them, to clean them out and gain some of the value that would be left there, to allow them to regenerate into an old-growth stand again?

My guess is that would not be the case. I would not expect you to respond to it unless you wish, simply because it would be a pre-

serve into which man should not and would not trammel under any circumstance, as is true in wilderness, as is now true in our unroaded areas, where we are denied even the right to go in and the take from those unroaded areas the burned trees that have been devastated by fire.

Our Forest Service in the last few years has just given up on trying to, because they knew by the time they fought the courts and the interest groups that the salvage would be salvage-less because the value would so have deteriorated, that they would just as well walk away from it. I watched that happen in my State a year ago and find that somewhat tragic.

So I think you hear by my statement a high level of frustration as it relates to how we approach constantly locking up portions for their uniqueness until there comes a day when there is none left to lock up, let alone none to manage in a multiple or a balanced way.

We know that there are a good many acres out there that we now manage for that purpose, and I suspect that some of them will always be there, although I must tell you that you, Peter, and I and the chairman have served in the House, and I will never forget the day when we were designating a wilderness in southern Missouri for its uniqueness, its beauty, and its pristine qualities, except we were going to have to remove 250 miles of roads and one power line and about 35 miles of barbwire fences, and the reason was because it had once been logged and mined and it had regrown so beautifully that someone was now wanting to claim it as a wilderness.

Well, it is now wilderness. It is known as the Mark Twain, although it was once an actively managed resource for the purpose of returning value to those who were managing it at the time, and my guess is managing it to much less strenuous environmental standards than those who would manage it today.

I guess that is a chance for me to express some of my frustrations. I pledge to my chairman that we will work together to try to resolve this. In my State we have a stand that is nearing old-growth today. It is 100 years old. Well, it will not be 100 years old for 8 more years, Mr. Chairman, because in 1910 Mother Nature burned over 2 million acres of it, and across my State of Idaho and into Montana and into Washington is this marvelous stretch of perfectly even-aged, beautiful timber that started to regrow in 1911, and it has not been touched.

It has now reached its life cycle, so it is by definition old-growth by the term of the species. It is now ready to be burned. It is starting to die. The question is in my State, will we preserve it or will we develop the mosaics of uneven age stands that are a result of wise and effective timber management for the purposes of lessening the fire rate, creating 500 or 600 jobs, and adding phenomenal value to and, my guess is, properly managed, a much higher sensitivity and quality of environment and watershed that is much more productive and useful than the kind that is now nearly ready to deteriorate, as my foresters or our foresters in the U.S. Forest Service tell me.

Senator, this is but a match or a lightning strike away from the episodic character that it held in 1910, when nearly two million

acres, one community, five logging camps, one train, and ten people died. That is a frustration that needs to be worried about and I worry about it.

Thank you, Mr. Chairman.

Senator WYDEN. I thank my colleague. I am going to have a couple of comments, but first our colleague Mr. DeFazio.

Mr. DEFAZIO. I think I can find a question somewhere in that statement, Mr. Chairman. Obviously, I am much less knowledgeable about east side issues, my district being entirely a west side one, and the life cycles there, although I spend a fair amount of time in central Oregon, but that is again even different than the intermountain region in Idaho. So I am not going to pretend to be an expert on the life cycles there.

But what we are talking about with late successional reserves here is essentially under the Clinton plan the late successional reserves, in part because of the reluctance of the Forest Service and in part because of some of the processes that were set out, are not being thinned to varying standards, which would in fact create or attempt to duplicate, and you will hear from experts after me, the mosaics that the gentleman mentioned on the west side.

So first I would say that in fact where we would be on the west side—and again, I am not so knowledgeable of his State or the categories there—but the old-growth that we would preserve on west side is probably a lot less acres than what is currently set aside in late successional reserves that require some management to achieve their real potential and to better emulate a natural system.

I think there is some potential grounds for agreement here. Beyond that, on the slab of carbon laid on the ground, I recommend that some time if the Senator wishes to visit my district we will go through the A.C. Andrews Experimental Forest and you can see a very exciting experiment they have growing there of a log rotting, which they have been monitoring now for some 30 or more years, I am not sure how many years, and the value of something actually that is rotting and what it contributes.

There is not—even when a forest reaches a climax and trees do fall over there is some very substantial benefit that they have demonstrated there. In many cases the old-growth we are talking about west side could well have another 200 or 250 years of viability and that is a little longer-term look than we usually take in Congress.

I think preserving that while we bring along some other areas, and then perhaps natural processes will befall that area and it will begin the cycle all over again. I cannot look quite that far in the future, but that is the sort of thing we are talking about here.

I just recommend, I think we both probably need to learn more about each other's side of the mountains and what the problems are there and it could be helpful to both of us probably.

Senator CRAIG. Mr. Chairman and Peter, thank you. I am not as aware of your side as I am our side, although I spent the last 20 years looking at these issues. As I said, you will have my attention and my cooperation where we can to see if we can resolve this issue.

I think the health of our forests nationwide depends on more active management and less lockup, although some uniqueness deserve to be preserved and I voted for those and I have worked with

you on it. I am not sure I am going to give you my time to go look at a rotting log, though.

Thank you.

[Laughter.]

Mr. DEFAZIO. It is a pretty exciting experiment, let me tell you. You will hear about it later, I am sure.

Senator CRAIG. Trust me.

Senator WYDEN. Let me see if I can respond to my friend for a minute—

Mr. DEFAZIO. They do other things there, too.

Senator WYDEN. First, let me again pledge my full cooperation with you on this effort. In addition, this morning I had a good conversation with Frank Murkowski about this and made it very clear that we are going to be working closely with him. Of course, Alaska has some special concerns in this regard.

Second, I think with respect to old-growth—and Peter I think touched on it and I want to be clear what I am talking about. I am talking about old-growth in the context of an integrated management plan, so that we look directly into some of the things that you hold hearings on, painstaking hearings, about what it took to come up with a good management plan.

In that regard, Peter has talked about, and he did not mention it in his testimony, I do not think, about how some of the forests and maybe some of the south coast, Peter, that you mentioned, you think almost would be pretty good examples of a model kind of forest, where you could really look to gain some valuable information about how you come up with an integrated management plan and have strong old-growth protection.

Do you want to comment on that, your idea of whether the Congress ought to be looking at, not just in Oregon but elsewhere, at the possibility that there are some forests that could be pretty good models of what we are trying to do?

Mr. DEFAZIO. I think in particular, Mr. Chairman, we were talking about an area on the Siuslaw where they actually in a fairly short area, which only old politicians who have been around a long time can cover, you can go to an area and see an area that was naturally reforested, I believe after a fire or something.

But it is an extraordinary density. You can see in that area that the trees are in fact—to tell the truth, I cannot remember whether this one was—I have been to both, some that are naturally grown back. This one may have been actually planted. But the trees are very small, very close together, nothing on the forest floor, as I said virtually a biological desert.

You can walk a fairly short distance to a stand which was thinned to a certain density, the number of trees, and you find trees of the same age that are much larger in diameter, substantial undergrowth, some sign of wildlife. Then you walk in a little further to an area that was even more substantially thinned, again exactly the same age. The trees are again larger; the undergrowth, you have got to push your way through it. There are signs of big game, deer and elk and other things in that area.

So it is just sort of an extraordinary example of where we could be going with some management. The interesting thing is, if you took both someone from a timber company and some environ-

mentalists there and you said, look at these three areas, what do you think, everyone would go to the first part, which goes to the dog hair category, and say: Well, we do not want this. Some people would look at the second area and say: Well, this is really where we want to go. Others would look at the third area and say: No, this is what we want.

So the difference now is the difference between the second area and the third area, which is the amount of thinning that is being done and what your ultimate desired condition is and what you are managing that for.

In a way it is a cop-out, because in a way what I am talking about here could put the debate over the real future of some of these west side forests off indefinitely. We could put it off for another generation, because if you could get agreement on going in and doing the necessary thinning and removing that you would begin to be managing toward that second and third category, because you would have the diversity.

But what would happen is you would not go back into those areas, even if you decided you were just managing these forests for timber, not to ultimately regrow to old-growth-like characteristics, for another generation. So in a way it is almost like the thing we always love to do around here, which is study a solution to put off difficult decisions.

In a way, we could give the next generation a gift, which is we are going to improve the value of these things dramatically and put it on a path where you can ultimately choose. But our intention is we would be managing, as you and I have talked earlier, for the old-growth characteristics, restoration forestry.

Again, it is probably very different than your forests, but on the west side it is pretty dramatic to see this.

Senator CRAIG. Peter, thinning and space and moisture and sunlight have the same effect east side, west side, just different species.

Senator WYDEN. I just think—and Larry really touched on it—what we hear again and again every time we are home as westerners is people want the win-win. They want to preserve treasures, they want to protect those local economies. I think that the Congress' inability, starting with the Northwest Forest Plan, to come up with something like, I hope we will do this time, really gets us more to a lose-lose. We are not meeting a resource-dependent community's need for economics, which is why we hear about the frustration that you describe so well, nor do we deal with some of the protections for old-growth that in places that Peter is talking about sound like naturals.

I think this is exactly what I hope to do by starting off. Peter, do you want to add anything?

Mr. DEFAZIO. No, Mr. Chairman. I have emphasized the Coast Range, but those are the conditions that pretty much prevail over a wider area and perhaps even is applicable—I mean, I know it is applicable to some extent—in central Oregon, perhaps even over into the intermountain region.

Obviously, in putting this together we should take a broad view. But I have been particularly focused and my energies really go to those areas of forests that have been under the Northwest Forest

Plan. But I am not averse to looking beyond those areas and trying to develop some knowledge and expertise beyond that. But this is where I have been particularly focused.

Senator WYDEN. Thank you very much.

Mr. DEFazio. Thank you.

Senator WYDEN. We will be working with you.

Okay, Mr. Henri Bisson, Bureau of Land Management; Sally Collins, Forest Service.

While you are getting settled, let me recognize my colleague.

Senator CRAIG. Mr. Chairman, let me ask unanimous consent that my full statement be a part of the record.

Senator WYDEN. Without objection, so ordered.

[The prepared statement of Senator Craig follows:]

PREPARED STATEMENT OF HON. LARRY E. CRAIG, U.S. SENATOR FROM IDAHO

I want to thank Chairman Wyden for calling this hearing today. As with most issues we face on our public lands, the issue of old growth is as contentious as they come.

Representative DeFazio, welcome, I appreciate you coming over today to help us better understand the old growth issue through the eyes of your constituents in Oregon. I also appreciate your commitment to finding solutions to these contentious issues. We need to come together to find solutions that are good for the environment and good for the people who depend on our public lands for their economic survival.

Mr. Chairman, I will begin by saying that the term "preservation of old growth" is an oxymoron. The very concept of attempting to freeze trees, in time, is akin to denying that gravity exists. Every forest ecosystem in this country proceeds through an evolutionary process. Some, like Westside Douglas fir, take a long time to make the transition from young saplings through a final catastrophic, or man-made, event that brings them full circle. Others move from regeneration to maturity to death and then rebirth in as short as 100 years time.

Those who would permanently set-aside old growth remind me a bit of Don Quixote. If we pursue such a course in our efforts to deal with forest health, I fear we too face a future of tilting at windmills.

Second, given our forest health concerns, I want this Congress to clearly understand that I am very skeptical about the wisdom of considering any additional set-asides.

Congress and past Administrations have set-aside an area equal in size to the States of Maine, New Hampshire, Vermont, New York, Pennsylvania, Massachusetts, Connecticut, Rhode Island, Maryland, and Delaware. These set-asides are in prescriptions that severely restrict or eliminate our ability to manipulate these forests for the good of the land.

If many of these set-asides are destined to burn, are we prepared to un-designate these area after they burn? Some how I think not. Rather, the same folks who would end all timber harvesting on public land will more likely come back for another bite at the apple demanding additional set-asides from the remaining maturing forests.

Finally, Mr. Chairman, the culture of my State is that we are brought up to avoid waste and to assure that our inactions do not damage the forests that we will pass on to our children and grand children.

Just last week we learned that we have over 73 million acres of public land in the West that are at risk for catastrophic fire. This is a tremendous amount of fuel to be volatilized and pumped into our air sheds as carbon dioxide, not to mention all of the other pollutants and habitat damage caused by these fires.

Mr. Chairman before we attempt to preserve something that will inevitably die and decompose, I hope we will work to remove most of these trees as they die and will work very hard to find ways to store them in American's favorite investment and most effective carbon-sink—homes!

I look forward to today's testimony and hearing how our witnesses feel old growth issues should be addressed.

Senator WYDEN. All right, let us begin with Mr. Bisson. Welcome. We will make your prepared statement part of the record and if you can summarize.

STATEMENT OF HENRI BISSON, ASSISTANT DIRECTOR, RENEWABLE RESOURCES AND PLANNING, BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR

Mr. BISSON. I will briefly summarize my comments this afternoon.

Senator WYDEN. Great, great.

Mr. BISSON. Good afternoon, Mr. Chairman, Senator Craig. I thank you for the invitation to speak this afternoon on behalf of the Department of the Interior to discuss the status of old-growth forests on public lands.

Approximately 48 million acres of diverse forests and wetlands are managed by the BLM. 2.7 million acres are located in western Oregon and northern California. Public domain forests and wetlands outside of western Oregon comprise about 46 million acres, 28 million acres of which are in Alaska. The BLM's largest forest management program is centered in western Oregon and northern California.

In 1995, BLM incorporated the Northwest Forest Plan into its land use plans. The main tenets of the plan are to protect and enhance late-successional and old-growth forest ecosystems and habitats for associated species to provide a framework for maintaining and restoring aquatic ecosystems and to provide for a sustainable supply of timber. Each of these tenets is equally important in achieving balanced implementation of the plan.

Under the plan, late successional forests are defined as stands which are generally 80 years and older. Old-growth forests are defined as stands which are 200 years and older. At the outset of the plan, BLM managed approximately 1.06 million acres of forests that were 80 years and older and 357,000 acres of forests that were 200 years and older.

The plan established a series of reserves to cover approximately 80 percent of the total plan acres. Late-Successional Reserves are large blocks of land which include both younger and late successional forest types. They encompass the majority of significant late-successional and old-growth forests.

Thinning of younger forests within the LSR's, as suggested by Mr. DeFazio, is allowed in order to foster old-growth development, but large-scale commercial harvesting of trees is not permitted in LSR's.

Riparian Reserves along rivers and streams are responsible for maintaining and restoring riparian structures and functions. They are an important component of old-growth systems as well and timber harvest restrictions are approximately the same as within the LSR's.

Within the Northwest Forest Plan area there are also Congressionally Reserved Areas, such as national parks and wilderness areas, that contain old-growth.

The term "Matrix" is defined as that area of the plan that is managed primarily for timber production. The Matrix represents 20 percent of the BLM-managed area. The objective of the Matrix is to provide a steady supply of timber that can be sustained over the long term without degrading the health of the forest. Matrix standards and guidelines provide that we leave snags and live trees and downed logs and woody debris behind. We also have Sur-

vey and Managed standards and guidelines which have been the subject of previous hearings up here, which have resulted in management recommendations for more than 300 rare and little-known species. Recently, we implemented changes that were instituted via a supplemental environmental impact statement and record of decision. The Matrix lands are managed using a variety of treatments, including thinning and regeneration harvest, generally in stands less than 80 years old.

At the onset of the plan BLM anticipated that approximately 3 percent of late successional and old-growth forests would be harvested during the first decade of the plan implementation. During the first 3 years, harvest rates of late successional forests closely aligned with the plan assumptions. During the last 3 years the BLM has sold only 20 to 30 percent of the plan assumed levels. The reduced harvest has primarily been a result of litigation and from efforts to implement the survey and managed standards and guidelines.

As a result, significantly less than the 11,000 acres of old-growth projected to be harvested was actually harvested on BLM managed lands. The majority of harvest on BLM lands since 1998 has come from thinning in forest stands that are less than 80 years of age. The majority of the existing late-successional and old-growth forest is protected. Given the extensive reserve system and the standards and guidelines under which the Matrix is managed, the development of the late-successional and old-growth forests will exceed the rates of harvest.

I would like to talk about public domain forest for at least a second. The Bureau recognizes the role that remnant old-growth forests play in providing unique historical and ecological niches across the landscape. Over the past decade, our public domain forests have been managed to maintain the desired forest conditions intended to reflect the potential natural community.

Our program emphasis has shifted away from supporting commercial treatment to maintaining, restoring, and improving forest sustainability and health. We face significant challenges in managing our public domain forests and woodlands because our inventory data on these acres is outdated and our professional forester work force has declined dramatically since 1991. We estimate that 75 percent of our remaining professionals will be eligible for retirement within the next 5 years.

Old-growth occurs in noncommercial forest types, such as pinyon-juniper woodlands and we are currently managing these old trees, considering them as we move ahead with land health treatments that we are implementing in some of our stands. We are also doing forest restoration treatments in conjunction with implementation of the National Fire Plan and in some areas, such as Mount Trumbull in Arizona, projects are designed to protect and enhance old-growth forests and restore historically based natural conditions.

The Bureau, thanks to Congress, has been able to augment our forest health activities through the Forest Health and Ecosystem Restoration Fund. This revolving fund has accounted for \$50 million worth of forest health and restoration treatment since its inception.

Mr. Chairman, that concludes my prepared remarks this afternoon.

[The prepared statement of Mr. Bisson follows:]

PREPARED STATEMENT OF HENRI BISSON, ASSISTANT DIRECTOR, RENEWABLE RESOURCES AND PLANNING, BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR

Good afternoon Mr. Chairman. Thank you for inviting the Department of the Interior to discuss the status of old-growth forests on public lands managed by the Bureau of Land Management (BLM). Approximately 48 million acres of diverse forests and woodlands are managed by the BLM throughout the western United States, of which 2.7 million acres are located in western Oregon and northern California. Public Domain forest and woodlands managed by the BLM outside of western Oregon comprise approximately 46 million acres, including 28 million acres in Alaska. The BLM's largest forest management program is centered in western Oregon and northern California. Therefore, my comments will focus primarily on this program. However, I will also address Public Domain forest management and some of the challenges we face in that program as well.

In 1995, the BLM incorporated the Northwest Forest Plan (NWFP) into its land use plans for the six western Oregon districts and three northern California field offices covered by the NWFP. The NWFP's system of land use allocations and operational standards and guidelines represent the management framework from which the plans were developed. The main tenets of the NWFP are: 1) to protect and enhance late-successional and old-growth forest ecosystems and habitats for associated species; 2) to provide an ecosystem-wide framework for maintaining and restoring aquatic ecosystems; and 3) to provide for a sustainable supply of timber. These tenets are reflected in these locally-based land use plans. Each of these tenets are equally important in achieving the balanced implementation of the plan.

LATE-SUCCESSIONAL AND OLD-GROWTH FORESTS

Although definitions differ by ecosystem, under the NWFP late-successional forests are defined as stands which are generally 80 years and older, and old-growth forests are defined as stands which are 200 years and older. Old-growth forests, as defined in the NWFP, are a subset of late-successional forests. At the onset of NWFP implementation:

- In Western Oregon, approximately 48 percent of the forests on BLM's 2.2 million acres were 80 years or older. Approximately 16 percent of those forests were 200 years or older.
- In northern California, approximately 60 percent of the forests on BLM's 146,000 acres were 80 years or older. Approximately 25 percent of those forests were 200 years or older.

RESERVE LAND USE ALLOCATIONS

The Northwest Forest Plan established a series of reserves that cover approximately 80% of the total Plan acres. The principal types of reserves are:

- Late-Successional Reserves (LSR)—These reserves are large blocks of land which include both younger and late-successional forest types. They encompass the majority of both the existing ecologically significant late-successional and old-growth forests. The objective of LSRs is to protect and enhance conditions of late-successional and old-growth forest ecosystems. Thinning of younger forests within the LSRs is allowed in order to foster old-growth development. Large scale commercial harvesting of trees is not permitted in LSRs.
- Riparian Reserves—The Riparian Reserve allocations, located along rivers and streams, are responsible for maintaining and restoring riparian structures and functions. They maintain habitat for riparian-dependent and associated species, and for species that are dependent on the area between the upslope and riparian areas, and provide safe travel corridors for many terrestrial animals and plants. Riparian Reserves are an important component of the old-growth system. Timber harvest restrictions are approximately the same as for LSRs.

Congressionally-Reserved Areas—Congressionally-reserved areas, such as National Parks and Wilderness Areas, also form an important part of the NWFP strategy for protection of old-growth.

MATRIX LAND USE ALLOCATION

The term “Matrix” is defined as that area in the NWFP that is managed for timber production. The Matrix, which represents 20 percent of the BLM-managed NWFP area, is the focus of the social and economic component of the Plan. The objective of the Matrix is to provide a steady supply of timber that can be sustained over the long-term without degrading the health of the forest or other environmental resources. There are a variety of standards and guidelines, protection measures, and environmental requirements in place for the management of these lands:

- Standards and guidelines, applied in association with timber harvest, require the retention of snags, live trees, down logs and woody debris, measures designed to promote diversity and protect late-successional and old-growth forests and associated species.
- “Survey and Manage” standards and guidelines have resulted in management recommendations for 301 rare and little-known species. Recent changes in the “Survey and Manage” standards and guidelines were instituted via a Supplemental Environmental Impact Statement (SEIS) and Record of Decision (ROD), which was signed by the Secretaries of the Interior and Agriculture on January 12, 2001. These changes should enable us to conduct surveys in a more timely way, to establish an annual species review process, and to create a better adaptive management process. As the newly revised standards and guidelines are undertaken, activities on some Matrix lands are expected to resume, while protecting many species dependent on the region’s old growth ecosystems.

The Matrix lands available for timber harvest are managed using a variety of treatments, including thinning and regeneration harvest. Thinning treatments remove individual trees to enhance the growth and health of the remaining stand. These partial harvest treatments are generally applied in forest stands less than 80 years of age. Regeneration harvest treatments remove most of the merchantable timber while retaining 6 to 25 live trees per acre to provide a “legacy” of older forest components. After a regeneration harvest, trees are planted to produce a young forest stand developing along side the older forest legacy trees which were retained. In addition, consultation is conducted with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service when actions may effect threatened or endangered species.

FIRST DECADE GROWTH AND HARVEST

At the onset of the NWFP, BLM managed lands with approximately 1,061,000 acres of forests 80 years or older (late-successional), and 357,000 acres of forest 200 years or older (old-growth). BLM anticipated that approximately 3% of late-successional and old-growth forests would be harvested during the first decade of the NWFP’s implementation.

During the first three years of the NWFP, harvest rates of late-successional forests closely aligned with the Plan assumptions. However, during the last three years, the BLM sold only 20 to 30 percent of the Plan assumed levels. The reduced harvest is primarily a result of litigation, including recent litigation on anadromous fish and the northern spotted owl, and from our efforts to implement the Survey and Manage standards and guidelines. As a result, significantly less than the 11,000 acres of old-growth projected to be harvested in the first decade was actually harvested on BLM-managed lands in western Oregon.

Since FY 1998, there has been very little harvest of old-growth or other late-successional forests in the Northwest. The majority of harvest during this period has come from thinning in forest stands less than 80 years of age.

The majority of the existing late-successional and old-growth forest is protected. Given the extensive reserve system and the standards and guidelines under which the Matrix allocation is managed, the development of late-successional and old-growth forests will exceed the rates of harvest.

PUBLIC DOMAIN FOREST MANAGEMENT

Management of the Public Domain forests and woodlands is guided by the Federal Land Policy and Management Act and the BLM’s Public Domain Forest Management Policy. The Public Domain Forest Management Policy requires that forest ecosystems be maintained. In addition, over the past decade, our forests have been managed to maintain or create desired forest conditions which are intended to reflect their potential natural community, including related contributions to biodiversity and wildlife habitats. The BLM’s policy directs managers to conduct and maintain current inventories of forest land and to use the Bureau land use planning process to map desired future forest conditions and implement management actions

needed to achieve those conditions. The Bureau recognizes the role that remnant old growth forests play in providing unique historical, ecological niches across the landscape. As such, program emphasis has shifted away from supporting commercial treatment actions to a strategy aimed at maintaining, restoring and improving forest sustainability and health.

The Bureau faces significant challenges in managing Public Domain forests and woodlands. Inventory data on these lands is outdated. However, we are drafting a proposal to participate more fully with the Forest Inventory and Analysis (FIA) program of the USDA Forest Service in order to fill the gap in our inventory data. We are also poised to launch a new Bureau-wide inventory program, the Forest Vegetation Inventory System (FORVIS). This inventory database will be implemented over the next 2-3 years.

Our professional forester workforce declined over 36% between 1991-1996, and we currently estimate that 75% of remaining professionals will be eligible for retirement within the next five years. In the event all of these individuals were to retire, we would be left with a mere 15% of the forester workforce of 1991. We are currently exploring ways to address this problem, including contracting, funding positions using fire plan funds, and sharing staff with the U.S. Forest Service.

A certain percentage of "old growth" occurs in non-commercial forest types such as the pinyon-juniper woodlands of Arizona, New Mexico, and Nevada. With the expansion of pinyon-juniper woodlands outside of their natural range, due primarily to fire exclusion, there is a need to identify appropriate ecological sites for this forest type and to initiate actions to return it to the "natural" range. Currently, old growth trees are considered those native species that are at least 150 years old. Several states are piloting projects to manage their pinyon-juniper stands, and, where ecologically appropriate, reduce its wildfire potential where fire exclusion has allowed for its unchecked expansion. Materials produced as a by-product of this ecologically based management strategy may provide measurable benefits for bio-energy production.

Forest restoration treatments, particularly in dry forest types, are being undertaken with the complimentary objectives of protecting communities and providing forests that are resilient to disturbance factors, such as insects and disease. In other areas, such as the Mt. Trumbull area in the Grand Canyon Parashant National Monument, projects are designed to protect and enhance old growth forests and restore historically-based natural conditions as they existed prior to intensive livestock use and fire suppression.

The Bureau, with the approval of Congress, has been able to augment forest health activities through the Forest Health and Ecosystem Restoration Fund. This revolving fund has funded over \$50 million worth of on-the-ground forest health and restoration treatments since its inception in 1993.

Overall, the BLM's Public Domain Forestry Program manages those areas which contain old-growth stands where they exist in their natural range. The continued health and vigor of these older trees is considered in the treatments that are designed to improve forest resiliency, reduce wildfire hazards, and support a high level of biodiversity.

Mr. Chairman, this concludes my prepared statement. I will be pleased to answer any questions that you or other members of the Committee might have.

Senator WYDEN. All right, very good.

Ms. Collins.

STATEMENT OF SALLY COLLINS, ASSOCIATE CHIEF, U.S. FOREST SERVICE; ACCOMPANIED BY ROBERT LEWIS, PH.D., DEPUTY CHIEF, RESEARCH AND DEVELOPMENT; MIKE McCLELLAN, PH.D., RUSS GRAHAM, PH.D.; AND CURT KOTCHAK, PH.D., VEGETATION RESEARCH ECOLOGISTS, U.S. FOREST SERVICE

Ms. COLLINS. Thank you, Mr. Chairman, and thanks for the opportunity to appear before you today. It is always nice to be around fellow Oregonians.

I am Sally Collins, the Associate Chief of the U.S. Forest Service, and I am accompanied here on my left by Dr. Robert Lewis, the Deputy Chief of Research and Development. In addition to that, I have with me three vegetation research ecologists from around the

country: Dr. Mike McClellan from Juneau, Alaska; Dr. Russ Graham from Moscow, Idaho; and Dr. Curt Kotchak from Morgantown, West Virginia. We brought these folks in case of some technical questions about old-growth in the various ecosystems around the country.

What I would like to share with you today is how the Forest Service through science has defined old-growth and its role in the ecosystem and spend a little bit of time talking about our old-growth policies as well as the Northwest Forest Plan, although I am reserving a lot of that to a subsequent hearing where we will actually talk about that. So I hope that is okay.

At the outset, I want to make clear just four main points about old-growth forests that we have discovered over the years. First, there are a lot of terms used interchangeably to describe old-growth, terms like "old forest," "late successional," "climax forest," "ancient forest," "forest primeval." All those are terms that really have almost interfered with the discussion and confused a lot of the dialogue around this issue. What we have spent the last number of years doing is defining that, and I will talk about that in a minute.

The second point is old-growth forests are a vital part of healthy ecosystems.

Third, old-growth characteristics vary across different ecosystems. We have heard that already and you will hear that some more today.

Four, like other forest types, old-growth forests are dynamic forests that do not last forever.

The Forest Service has developed specific definitions for old-growth for major forest and community types around the country for all nine Forest Service regions. In the southern and eastern region, a significant effort involving the Nature Conservancy was completed a few years ago. I want to add these to the record. There are 114 definitions of old-growth that I think are important to have in this dialogue.

So I guess again, two points again to reiterate: that old-growth has a lot of variety, a lot of variability; and second, that they are a dynamic system. All forests are in a continuous state of change. Insects, disease, wind, fire, and other natural forces are constantly at work altering the character of a forest. Fire can reset that successional clock, killing understory and removing and consuming dead material.

It is important to note that forests in older even-age conditions like you would have even after a stand replacement fire can sustain themselves for long periods of time, but not permanently. As they continue to progress through their life cycles, many of the oldest trees typically die and, absent major disturbing activities, are replaced by shade-tolerant understory species. You have heard this. This is what succession is all about.

Human management activities on forests can enhance or detract from old-growth activities or characteristics. Similarly, a lack of human management activities does not guarantee that old-growth characteristics will be established or maintained.

Some believe that no management should protect old-growth, but we know silvicultural activities have the ability to accelerate the

development of ecological characteristics associated with old and true forests. I spent some time talking to Tom Mills about the research that is being done on LSR's in the Pacific Northwest and we have determined—and some nice reports are out, very contemporary reports, about how this is possible.

As you know, I spent a lot of my career in central Oregon. Many projects in LSR's in central Oregon where we actually protected the old-growth by having fire fuel breaks around those old-growth areas, so you could reduce the risk of fire through silviculture and protect old-growth that way.

Just as a footnote before we leave this, in the West the area of older forest, over 150 years—and again, age is not the only criteria for an old-growth forest; there is all these other components that are different depending on species and area—we will double that number of the total forest area by 2050, double the number of older forests, forests over 150 years.

Now, not all of those, again, are old-growth forests, but it will increase the number of older trees that are out there.

Now, we have been recognizing the value of old-growth for the last 12 years in terms of Forest Service policy. In 1989, the Chief issued a policy statement on old-growth and in that we talked about the need to develop a good definition so we all are talking about the same thing. From that we have developed inventory information and so forth, and now we are in the position of being able to, through our forest plan amendments, have some good data out there that we can aggregate and use.

Just a couple of comments about the Northwest Forest Plan. We are supportive of this notion of managing LSR's. We have been doing it. It has been working. We have averaged somewhere between 50 and 100 million board-feet a year of outputs from LSR's over the last 5 or 6 years and we know it can work, and now we have got research to support that conclusion.

So with that, I just want to say the Forest Service is committed to maintaining significant areas of old-growth and we really look forward to working with the committee as we work through this really important issue.

[The prepared statement of Ms. Collins follows:]

PREPARED STATEMENT OF SALLY COLLINS, ASSOCIATE CHIEF,
U.S. FOREST SERVICE

Mr. Chairman and members of the Committee, thank you for the opportunity to appear before you today. I am Sally Collins, Associate Chief for the USDA Forest Service. I am accompanied by Dr. Robert Lewis, Deputy Chief for Research and Development. We appreciate the Committee's interest in protection of old-growth on national forest lands. Today, I would like to share with you how, through science, we have defined old growth and its role in the ecosystem. I also want to spend some time discussing our old growth policy nationally and then, finally, focus on examples from the Pacific Northwest.

GENERAL CHARACTERISTICS

At the outset, I want to make clear some important aspects of old-growth forests that we have found:

- Many terms are used interchangeably to describe old-growth;
- Old-growth forests are a vital part of a healthy ecosystem;
- Old-growth characteristics vary across different ecosystems; and
- Like other seral stages and forest types, old-growth forests are dynamic forests that do not last forever.

The terminology can sometimes be confusing. Terms such as “old growth,” “old forest,” “late successional,” “climax forest,” “ancient forest,” and “forest primeval,” are often used interchangeably which sometimes leads to confusion in discussions about old-growth. A full discussion of these terms may be found in Appendix A.

The Forest Service has developed specific definitions of old-growth for major forest/community types in all nine regions. In the Southern and Eastern Regions this significant effort was completed in cooperation with the Nature Conservancy. These are included as an appendix to this testimony.

OLD-GROWTH VARIABILITY

Throughout the country there is a great deal of variety in old-growth forests. In the arid west, ponderosa pine grows to large sizes in relatively open park-like conditions. Southern pine forests exhibit similar characteristics. These ecosystems are often dependent on frequent, light-intensity ground fires to thin competing vegetation. Dense canopies of hemlock dominate old hemlock forests of the Northern Rocky Mountains with little vegetation underneath, except hemlock seedlings and scattered shade-tolerant plants such as orchids. Along with this variety, there are numerous wildlife species and communities of species that are associated with mature and old-growth forests. Tree species that dominate old growth are determined by local topography, elevation, soil, climate, geology, ground water conditions, and especially by the disturbance history of the stand and the forest type. In the Eastern U.S., very few acres in old growth conditions exist due to past historic land use practices.

Even forests that are not in a “late successional” stage can exhibit some of the ecological characteristics of old-growth. For example, aspen is short-lived and considered to be an early to mid-successional species. At 50 to 100 years old, aspen forests can be dominated by large trees nearing the end of their life cycle with scattered dead trees both standing and on the ground. Young conifer trees invading the aspen might dominate the vegetation under the canopy. The forests are considered to be in an old-growth condition, even though they are not “climax.” While the aspen trees live a relatively short life, the root system—the clone—from which the individual trees grow, can live for thousands of years. When disturbed, such as through a wildfire or logging, the roots sprout new trees to replace those that have died. Absent any disturbance, ecological succession will continue as the aspen trees die, and a conifer forest replaces the clones.

DYNAMIC SYSTEM

All forests are in a continuous state of change. Insects, disease, wind, fire, and other natural forces are constantly at work altering the character of the forest. Fire can reset the successional clock by killing understory and overstory and consuming dead material. Variables, such as fire intensity, fire frequency, and fire spread, play a major role in the amount, continuity, and extent of old-growth and other successional stages over time. Similarly, wind and insect activity create gaps or openings in contiguous old-growth forests in which shade intolerant species will establish.

Across the country, many of our old growth forests were established decades or even centuries ago because of some intense disturbance such as a stand-replacing wildfire. Forests in an older, even-aged condition can be self-sustaining for long periods but not permanently. As they continue to progress through their life cycles, many of the oldest trees typically die over a period of time and, absent major disturbance events, are replaced by shade tolerant understory species. In this way an old-growth Douglas-fir forest may be replaced by an old-growth western red cedar/western hemlock forest.

Human management activities on forests can enhance or detract from old growth characteristics. Similarly, a lack of human management activities does not guarantee that old-growth characteristics will be established or maintained. Some believe that no management other than protection should occur in old-growth. But silvicultural activities have the ability to accelerate the development of the ecological characteristics associated with old and mature forests. They also have the ability to reduce the risk of fire to existing stands of old-growth. By using silvicultural treatments and/or controlled burning in some young, even-aged forests to enhance the development of their large-tree characteristics, the Forest Service is helping to create the ecological conditions associated with old-growth forests. Silvicultural treatments can also reduce the dense understories that have developed under some old growth forests, such as those in the ponderosa pine region, so as to reduce the moisture stress on large trees and the risk of stand-replacing wildfires.

In the West, the area of forest older than 150 years will double to nearly one-third of total forest by 2050. (RPA Assessment 2000) While not all of these forests will have old-growth characteristics, many of them will meet old-growth criteria.

POLICY

The Forest Service recognizes the importance of maintaining an array of forest successional stages and conditions. In 1989, the Chief issued a position statement on old-growth. This statement recognized that there are significant values associated with old-growth and that decisions on managing forests to achieve old-growth values would be made during forest plan development. In 1990, the Chief directed Regional Foresters to develop definitions of ecological old-growth. These definitions have been developed for each Region as I mentioned previously. In January 2001, the Chief issued additional direction stating, "Consistent with the direction issued in 1989, we will complete the inventory and mapping of old growth forests based upon the standard definitions and inventories of old growth by forest type and community that are already developed." Inventory and assessment of old-growth is being done on a forest-by-forest basis as forest plans are revised. In addition, Forest Service Manual direction is being developed to guide future revision or amendment of forest plan direction. We are considering the inclusion of the following elements in the directive system to implement the revised forest planning regulations:

- The manner that we will protect, sustain, and enhance existing old-growth forests as an element of ecosystem diversity;
- How we will plan for old-growth within a landscape context;
- Direction to determine the historic extent, pattern, and character of old-growth; and
- How forest plans will project forward in time the amount, location, and patterns of old-growth within the national forest system envisioned under alternative management options.

NORTHWEST FOREST PLAN

We understand there will be a future hearing before this Committee on the Northwest Forest Plan (NWFP), and we will defer until that time addressing how and whether the plan is working. However, with respect to the topic of this hearing, we thought you might be interested in how the NWFP addresses old-growth.

The 24.5 million acres of federal land covered by the NWFP would provide for a substantial increase in old growth over the long-term. Of the land that is considered capable of growing forests (20.5 million acres), 41 percent was in a medium to large conifer condition in 1994. The NWFP projects a significant increase in medium to large conifer forest over the long-term for the area overall. In addition, the NWFP anticipates that forests of young trees will continuously occupy about 20 to 40 percent of federal lands. There still remains, however, significant disagreement about the extent of old-growth forests in the Northwest prior to European settlement. The amount of old-growth may be more than existed prior to European settlement. For instance, Tom Bonnicksen states in *America's Ancient Forest* that older Douglas-fir forests covered about 60 percent of the ancient landscape along the Pacific. Elsewhere, young stands in late successional reserves established prior to implementation of the NWFP can be treated through silviculture to accelerate development of ecological conditions associated with mature and late successional forests.

In areas where no timber production is scheduled, nature will continue to regenerate the forest through disturbances, such as wildfire, or the natural life cycles of individual plants. Between 1994 and 2000, approximately 266,700 acres of national forest land in Washington and Oregon within the area of the NWFP burned. From 1995 to 2000, approximately 25,000 to 30,000 acres of national forest land in Washington and Oregon within the area of the NWFP were harvested.

SUMMARY

The Forest Service is committed to maintaining significant areas of old growth. Analysis of this issue and management decisions are guided by national policies and are appropriately handled at the forest and sub-regional level through revisions of our forest land and resource management plans. We will continue to actively manage late successional reserves to speed the development of old-growth characteristics. We look forward to working with this Committee as we move forward on these and other important forest management issues.

This concludes my testimony. I would be glad to answer any questions that you may have.

APPENDIX A

DEFINING TERMS

While we have developed definitions for each major forest/community type, there are alternative definitions and terms frequently used in the discussion. These terms often trigger thoughts of the Pacific rain forests with multi-storied forest structures of redwoods or Douglas-fir, a fern-covered forest floor, and large, moss-covered trees decaying on the ground. But this picture does not accurately depict old-growth forests as they exist in other parts of the country.

As we discuss the issues surrounding management of old-growth, I would like to share with you how we have defined these various terms:

Late successional forest: A range of forest conditions that develop over time, beginning with stands in which tree crown expansion slows, openings between trees become larger and more stable over time in terms of stand structure, and large, standing dead and fallen trees begin to accumulate.

Ancient forest: This is a term used by many that is not science based. It generally refers to forest areas that are relatively undisturbed by human action, ranging in size from a few to hundreds of thousands of acres. These areas may be near, surrounded by, or adjacent to forest areas that have been substantially disturbed or altered by human management. As described by many participants in the discussion of old growth, ancient forests seem to have the following characteristics:

- Largely naturally regenerated;
- Less than 30% of the stand or forest area has been logged within the past century;
- Relatively undisturbed such that human activities have not significantly altered native forest structure, composition, or function;
- Relatively unmanaged, although they may have a history of fire suppression or grazing; and
- Composed of individual trees or stands of trees of different ages, with old-growth components constituting at least half of the stand or forest unit and having at least four trees per acre over 150 years of age.

Forest primeval; forest from very early times; **original forest:** A forest that is estimated to have existed on the planet about 8,000 years ago, before large-scale disturbance by humans began. It should be noted that at the time of European contact, substantial acres of North America's original forest had been substantially modified by human action, including widespread use of fire and clearing for agriculture in some areas.

Climax forest: Last stage of forest succession that can be self perpetuating over time absent any disturbance.

Old-growth and old forest: Ecosystems distinguished by old trees and related structural attributes. The characteristics of old-growth will vary considerably based on forest type. For example, the characteristics of Douglas-fir old-growth in western Oregon are considerably different than those of ponderosa pine in eastern Oregon. Pinyon-juniper old-growth characteristics in the Rocky Mountains are very different than that of limber pine in the Intermountain Region. Certainly, these western old-growth forest types are very different than the hardwood forest communities in the East. Old-growth encompasses the later stages of stand development which typically differ from earlier stages in a variety of characteristics that may include tree size, accumulations of large, dead woody material in some forest types, number of canopy layers, species composition, and ecosystem function. The age at which old growth develops and the specific structural attributes that characterize old growth will vary widely according to forest type, climate, site conditions, and disturbance regime. For example, old growth in fire-dependent forest types may not differ from younger forests in the number of canopy layers or accumulation of down woody material. However, most old growth is typically distinguished from younger growth by several of the following structural attributes:

- Large trees for species and site;
- Wide variation in tree sizes and spacing;
- Accumulations of large, dead, standing and fallen trees (except in forest types characterized by frequent, low intensity fires);
- Decadence in the form of broken or deformed tops or bole and root decay;
- Multiple canopy layers (in some forest types); and Canopy gaps and understory patchiness.

Senator WYDEN. Thank you very much.

Ms. Collins, you have got those big tomes in front of you and you said there were 114 different studies about what constitutes old-growth, correct?

Ms. COLLINS. It is not studies. They are definitions of old-growth based on region, species, and community type. So basically these are our definitions of old-growth.

Senator WYDEN. My reason for asking is that—I am sure that is the case—has anything been done to find commonalities between those 114? Because it would seem to me that if we took what those 114 said, well, we can come up with three-quarters of what it takes to get a definition of old-growth by just taking common elements, then we can work with you, the Congress, on a bipartisan basis and get the rest of it.

Have you done that?

Ms. COLLINS. Yes, there are some common elements, and when we talk about the term “old-growth” we can—Robert, you may want to answer that question.

Dr. LEWIS. Right, there are some common terminologies that can be used, depending on the forest type. But one thing that would be in common is the structure: multiple layers, multiple canopy levels. The reason we have so many types is because we have the entire USA. We have eastern forest as well as the western forest. We have pinion pine, which might be very small in diameter, but yet hundreds of years old.

So you can see why there are so many variations in definition, but basically we look at the characteristics of a stand, of a forest, based on the species that are involved, such as ponderosa pine.

Senator WYDEN. Doctor, could you get to the subcommittee within 2 weeks a list of the common characteristics that you have found on old-growth? In addition, could you provide a list of the areas where there are differences of opinion? Because I would like to find some ways to expedite this whole effort because, as Ms. Collins said, in 1989 people were talking about it and people are still going to talk about it unless we move this along. So in 2 weeks could you have that for us, doctor?

Dr. LEWIS. We could give you the definitions that we have and also some commonalities that we have. We are basically looking at the composition and structure of stands.

Senator WYDEN. I know you have got the book with 114. What I want are the areas with respect to those 114 different assessments where there are commonalities, and then I want to know where there are differences, so that we can begin to speed this up to get a definition.

Dr. LEWIS. There are six characteristics that we usually look for. One would be large trees; wide variation in tree size and spacing; number three, relative high accumulation of large-sized dead and fallen trees; decadence, that means deformed trees, trees with broken tops and so forth; multiple canopy layers; and canopy gaps and understory patches.

These are the six commonalities that we see in old-growth. Now, when you use the term “large trees” you have to keep in mind that this term is relative. A tree is large relative to the species of that tree. A redwood tree, very large; eastern cottonwood, it dies when

it is relatively small and it gets to that stage where it will be no more.

One thing about old-growth, the term that we use, it is a term that has value to it. It has been stated earlier that these trees are not static, these stands, these ecosystems. They constantly change. Every year there is one change or another, whether it is a change due to changes in the climate or whether it is a change due to an invasive species invading a particular site. It will not remain a snapshot in time.

Senator WYDEN. Ms. Collins, 2 weeks, can we have it?

Ms. COLLINS. Yes, you can.

Senator WYDEN. Okay, very good.

Now, my understanding is some of the technology, particularly remote imaging capability, can be of real value in terms of completing the inventory and the mapping of old-growth. Why has it taken so long to get the inventory, given the technology that seems to be out there the speed it up? Are you lacking money, are you lacking people? What is holding it up?

Ms. COLLINS. Well, we have a forest inventory program that actually Robert is in charge of, that looks at forest inventory information on a very broad scale using all of that kind of information, and we have research plots all over the country. We have been monitoring those and we do have very good data from that.

It depends on the scale that you need to use this information. At a forest plan level you need a certain kind of information. At a broad regional level that FIA, forest inventory information, is very useful and provides a lot of context. If I as a forest supervisor want to do something on a specific set of 500 acres, I need to know more than that data can give me specifically.

So that is the kind of information that we are looking at in terms of having the level of resolution at the point that you actually decide to do something on the ground. So we have to have a different level.

Senator WYDEN. That tells the public where the old-growth is, right?

Ms. COLLINS. It gives you, the larger inventory data gives you a general sense, but it does not tell you specifically where all the old-growth is.

Dr. LEWIS. Yes. The FIA program, the forest inventory and analysis, does an analysis of the Nation's forests, both public as well as private. It does the entire Nation. We look at attributes such as tree size, and the FIA counterpart data would be the DBH, the diameter-breadth-height; multiple canopy layers, tree species, snag, tally, or cull data; coarse, woody debris; stand age, meaning the age of the trees; and the growth rates; and the total bough mass and composition.

All of these data are acquired through the forest inventory and analysis program, and we present a snapshot of the Nation's forests, whether Federal or private. But we do produce specialized reports for the regions and national forests.

Senator WYDEN. Now, Ms. Collins, in your prepared testimony you said that the inventory would be completed as the existing forest plans were revised. But obviously, revising the forest plans has not been going forward in a timely way. Lots of them are not going

to be revised within 15 years, as required by the National Forest Management Act. So the public is going to have to wait even longer for mapping and inventory information.

Do you not think it is important to get this information so we can move more expeditiously with management activities and an integrated management plan?

Ms. COLLINS. Let me just put on a forest supervisor's hat for a minute. In terms of managing a national forest out there, I knew where all the old-growth was. What we have Northwest Forest Plan is some common definitions so that across a whole region we are talking about the same thing. For the first 5 years I was a forest supervisor I had 15 different definitions of old-growth that I was working on on one forest. It was very confusing.

So what we need to do is as we refine these definitions make sure that we are all talking about the same thing and we know what we are protecting old-growth for, we know exactly what characteristics we are looking for and where those are on the ground.

As we revise the forest plan, all of that will be mapped and all of that will be integrated into that larger plan. But as projects appear on a daily basis, we bring that new information in. We are always out there gathering new information and bringing that new information into our planning effort, so we know the context of the planning, we know where the old-growth is for a given project, we know what we need to sustain the, for example, Northwest Forest Plan standards and guidelines.

So it is brought into the decisionmaking on a day-to-day basis.

Senator WYDEN. The only problem is, unless this is sped up it is going to be too late. It is going to be too late both in terms of protecting old-growth and in terms of meeting the economic needs for the communities. I want to emphasize, with lots of the plans not being revised as the law requires, not being revised in a timely way, I think it is inevitable that people are going to wait even longer for mapping and inventory information, and I do not think you all are even taking full advantage of some of these technologies, which is why I asked about remote imaging capability.

So we are going to start by having you in the next 2 weeks get me these common definitions so that I can see what areas there is common ground on and what areas that there are not. Just know that this subcommittee is going to be prodding your agency very, very hard to get on with this inventory and using the technology, making sure that the plans are updated. At the pace we are going this could be the longest-running battle since the Trojan War, and I do not think these communities, both from the standpoint of economic needs and these special treasures, our old-growth, can afford that. That is something I feel strongly about.

Let me ask you about thinning and the potential there for thinning in the LSR's. I want to ask both of you, you, Ms. Collins, and you, Mr. Bisson. How much timber volume in your view could be harvested annually through a program of thinning the LSR's to quicken their development of old-growth characteristics?

Ms. COLLINS. We had our forest analyst in Portland do an analysis that came up with a figure of 86 million board-feet that could be annually harvested in those stands that have commercial value between 30 and 80 years of age in LSR's. Now, over the last 10

years, as I said, we have harvested somewhere between 55 million board-feet a year and 115 million board-feet a year. So that is very—in that time period, just based on what we could do, where we could put our program of work that year and what went through the system.

So we have the capacity to do something just under 100 million board-feet, in that area.

Senator WYDEN. Mr. Bisson.

Mr. BISSON. For the BLM, we estimate that about 15,000 board-feet per acre of timber would be produced as a byproduct from thinning to meet the LSR habitat goals; and an annual thinning program of approximately 11,000 acres, which we think we could sustain, would produce approximately 165 million board-feet a year.

Senator WYDEN. Now, the projections you are giving are based on current budgetary levels?

Ms. COLLINS. Well, I do not know. That was the long run sort of floor plan analysis capacity of a long-term program that we were given. I am looking at something else here in front of me—

Senator WYDEN. Why do we not?

Ms. COLLINS. Yes, this is pre-commercial thinning, okay.

Senator WYDEN. It is at current budgetary levels?

Ms. COLLINS. Yes.

Mr. BISSON. Not for us.

Senator WYDEN. Yours is the ideal?

Mr. BISSON. Ours would require about a \$20, \$25 million increase per year to carry out that kind of a program.

Senator WYDEN. How much of a budgetary increase, then, would the Forest Service need to do a thinning program at a desirable level?

Ms. COLLINS. All right, let me just say what I have in front of me here. We can get back to you on it with more specifics on this, but the Forest Service estimates it would cost about \$32 million to initiate an LSR thinning program that is really of this size. We think we have about 1.5, 1.6 million acres of overstock stands, so 75,000 initial treatment acres, and some of those are commercial, some of those are pre-commercial.

We can get you more specific information if you need it, but that is what they just handed me.

Senator WYDEN. Do your agencies favor thinning in 10- to 30-year-old stands, which I gather a lot of the experts feel are more ecologically productive, or thinning in older, 50- to 80-year-old stands, which many assert are more cost-effective?

Dr. LEWIS. I would invite one of our silviculturalists to come up to the podium as well, but it depends on the management situation, the species that you are dealing with. Russ? Russ from the Rocky Mountain Experiment Station from Moscow.

Dr. GRAHAM. Mr. Chairman, I think we have excellent opportunities to clean and weed our young stands to produce desired conditions into the future. The rub comes to that. Usually there is a non-marketable value to thinning of that small material. Uneven spacings, multi-species spacings, can be very effective in producing those conditions.

Senator WYDEN. So does that put the Forest Service in the 10- to 30-year camp or the 50- to 80-year camp?

Dr. GRAHAM. I believe that from my point as a researcher and as a Forest Service person it puts us in both camps very effectively, throughout the Rocky Mountains, throughout I would argue, through the West Coast, this is where we can operate in both of those arenas very effectively to create these conditions.

Senator WYDEN. BLM, what is your position on this?

Mr. BISSON. We will take any thinning we can get. Right now, virtually every thinning we try to do gets protested or appealed. I am not being facetious. I think we would propose to do thinnings in both age categories.

Senator WYDEN. You share the Forest Service version that within an integrated forest management plan and area you can probably have the two go side by side?

Mr. BISSON. Yes.

Senator WYDEN. A question for both of you in the scientists' division. I want to make sure that we are working with Fish and Wildlife and National Marine Fisheries Service, because the history of every one of these issues is that one hand of the government does not talk to the other on the key questions and it is clear that one of them that we are wrestling with right now is the definition question.

Are you all talking now to Fish and Wildlife and National Marine Fisheries Service, so that we can get at least the question of definitions, ramifications for habitat, sped up and there is some coordination?

Dr. LEWIS. As a practice, this agency has worked very closely with Fish and Wildlife Service. As a research organization, we are interested in objectivity, in actually having a clear, objective, empirical number of studies that we can deliver to the policymakers to enable them to make better decisions.

On the old-growth issues, we have done some work out in the Pacific Northwest, as well as other parts of the country as well. There are a number of issues surrounding it that we clearly do not have that empirical data that we think we need.

Senator WYDEN. What is the work you are doing with Fish and Wildlife and NMFS now on old-growth? Because that is going to be clearly critical to getting this done

Dr. LEWIS. We have with them on the northern spotted owl. I do not know if Sally has anything that she wants to add in the policy arena. Hold on just a minute.

Dr. GRAHAM. In my own personal experience, we worked with the interior Columbia River Basin project. We worked quite heavily with National Marine Fisheries and Fish and Wildlife Service in the planning process and in the assessment of the salmon and the forest habitats of the interior Columbia Basin in Oregon and Washington and western Montana and Idaho. So we did have a lot of work with those organizations during that process over the last 7, 8 years.

Senator WYDEN. Do you want to add anything to that, Ms. Collins?

Ms. COLLINS. I think in terms of the research part of it, I think that actually we do a lot of research into habitat needs. Forest

Service does a lot of research into habitat needs of different species as well as definitions for old-growth. I think the U.S. Fish and Wildlife Service and the National Marine Fisheries Service use a lot of our research.

Dr. LEWIS. I would like to share one other example. We worked with Fish and Wildlife Service very extensively on the Mexican spotted owl and the northern goshawk in ensuring that we had sufficient habitat to avoid getting some of these species being listed as threatened or endangered based on empirical information, based on science.

Senator WYDEN. I bring it up by way of saying that at the end of the day when we are going to try to see if we can put together this creative new approach, I just do not want to be, particularly with the Forest Service, Ms. Collins, I do not want to be in the position of being told we are still going to need more from NMFS, we are going to need more from Fish and Wildlife, so that is why you guys cannot go forward, and you cannot try to move a bill.

Ms. COLLINS. I want to be there right with you.

Senator WYDEN. You are on notice that that is something we expect to have done now as we try to get definitions, as we try to get the inventory questions, as we try to get the remote imaging capability work going forward.

Just a couple of other questions at this point for our first panel. Mr. Bisson, the agency has said that the reason that the probable sale quantity has not been met stems from lawsuits, including one related to a survey and management. But as I understand it, the lawsuit was filed because the agency had not completed the surveys as required by Northwest Forest Plan.

Could you set out for the record today why the surveys were not complete?

Mr. BISSON. I am afraid I cannot do that at this point. I would be happy to respond in writing, Senator Wyden. I am just not familiar with the exact circumstances that you just described.

Senator WYDEN. Because largely you all came here, your testimony was more focused on the forest land than it really is on the old-growth question, which is what we have talked about specifically. So I ask why it was that we were not getting the probable sale quantity that the forest plan called for, and it seemed to me it was about lawsuits. I figure if you all were going to make that the focus of your testimony when we ask for something else, you ought to tell us why it is not being done.

Mr. BISSON. Part of the issue I think revolves around species several years ago that were very difficult to inventory and to locate. Even scientists I do not think had very good methods in terms of locating them. They were on the survey and manage list, and I think the purpose for this supplemental EIS was to eliminate species that were very difficult to locate.

We are also going through a process, I think many of the stands, the Matrix stands in particular, where we are doing Survey and Manage we are finding some of the Survey and Manage species in many locations, and we are in the process of developing strategies to manage those species so that we can make decisions on which areas would be managed for those species and free up other Matrix lands where we could proceed with timber sales.

Senator WYDEN. Next time you come and talk about something other than what we asked for, be prepared to be asked some questions about it.

Mr. BISSON. Yes, sir.

Senator WYDEN. Because we wanted to get in with you in more detail on the old-growth question, and it seems to me most of your testimony deals with the forest plan. Since this is our first hearing on the subject, I want you to know how we are going to go about it in the future.

Mr. BISSON. Yes, sir.

Senator WYDEN. I want to recognize my colleague here in just a moment, but one last point for you, Ms. Collins, if I could. On this question of the definitions of old-growth and having you go through those gigantic tomes in front of you and speeding this up and working with the other agencies and getting the inventory process, what is behind it is that decisions are now being made with respect to forest plans and public processes that require people have this information.

I mean, in the process of revising forest plans people are saying on certain stands, save this and log that, and it is done in a public way. If the public does not have the information that I am talking about with respect to old-growth, information that the agencies started talking about in 1989 and the public does not know, for example, about old-growth characteristics, it is a little like your agency is asking the public to go on a blind date with the Forest Service.

I think that we have got to do better than that, and that is what we are going to try and do, with your cooperation and your assistance on this issue.

Let me recognize now my colleague from Oregon. I appreciate him coming.

STATEMENT OF HON. GORDON SMITH, U.S. SENATOR FROM OREGON

Senator SMITH. Thank you, Senator Wyden. I have been at a national security briefing, so I am sorry I am late to this. But this is also important because it relates to our resource security.

I welcome you all. I would ask that my statement be included in the record.

Senator WYDEN. Without objection, so ordered.

[The prepared statement of Senator Smith follows:]

PREPARED STATEMENT OF HON. GORDON SMITH, U.S. SENATOR FROM OREGON

Thank you, Mr. Chairman, for holding today's hearing on the management of "old growth" forests. This is a topic that is often confusing, and always controversial. I would also like to welcome several Oregonians to the hearing today, particularly Bruce Daucsavage of Ochoco Lumber in Prineville, Oregon. Bruce, more than any of us, knows the impact of failed forest policies on small communities and I am glad to have him with us. Also here today are Oregon Congressman Peter DeFazio, James Johnston of Eugene and Sally Collins—former Supervisor of the Deschutes National Forest—who is now Associate Chief of the Forest Service here in Washington.

Let me begin with the problem of definitions. Age, size, diversity, structure—these are all components that at different times have played into the definition of old growth. For some, old growth refers to a specific type of habitat for a particular species like the spotted owl. For others, old growth is more of a conversational term,

simply implying big trees. Even if scientists could agree upon one definition, the fact is that old growth lies in the eye of the beholder—and the beholders are legion.

Ten years ago, the term “old growth” had a fiery birth in the Pacific Northwest and has been emblazoned in forest management ever since. Since then, we have all done our best to cope, comply with federal law, and keep our communities alive. Whether or not that has worked, or is viable, will be the subject of another hearing.

What I would like to have addressed today is one particular aspect of the Northwest Forest Plan relating to old growth. In the Record of Decision, thinning of young stands was considered beneficial to the development of late-successional and old-growth characteristics. Unfortunately, this management tool has been under-utilized.

The Siuslaw National Forest in Oregon, for example, is largely classified as Late Successional Reserve (LSR) and moving rapidly into a competitive stage which scientists say offers very little biodiversity and will not develop into healthy vibrant stands that will reach 150-500 years old.

The forest professionals of the Siuslaw National Forest have identified approximately 300,000 acres in need of density management, including areas hand-planted over the past 35 years. An aggressive thinning proposal—approximately 5,000 acres per year—enjoys broad support for its potential benefit to both local economies and to the objectives of the Northwest Forest Plan. When I inquired with the Forest Service regarding this proposal, I was told that two factors precluded moving forward with an aggressive thinning program: insufficient funds and inadequate authority.

At their root, these barriers reflect a decision to contract-out thinning projects, rather than selling thinning projects as sales. I very much hope that the Forest Service is exploring alternative means of spreading out the cost of thinning, either through additional Congressional authorities or through changes in management priorities. Over time, I would like us to remain focused on progress on this front, as well as the most appropriate roles for Congress and the Administration.

Let me conclude by again thanking all those who are here to testify, and for my colleague from Oregon for holding today's hearing.

Senator SMITH. Ms. Collins, nice to see you. I wonder if you can give me a sense over the last—it seems like every year we are losing about 10 million acres of grassland, forest land to fires. How much old-growth are we losing in that equation?

Ms. COLLINS. I think it was something over—and I will just talk about the Pacific Northwest and the only thing I have in my head at the moment is the Pacific Northwest and the Northwest Forest Plan. But I think we were looking at some figures earlier today, that there were about 250,000 acres that burned, and I am not sure if that is in the last year.

Senator SMITH. This year or each year?

Ms. COLLINS. Since 1994 to 2000, so that is about 8 years. 252,000 acres. A lot. We have harvested about 30,000 acres.

Senator SMITH. We have lost a quarter of a million and harvested—

Ms. COLLINS. Harvested about 25 to 30,000, yes.

Senator SMITH. Is there anything that we are talking about doing in terms of forest health that could have reduced that acreage? Has any proposal been made by anyone that would have made that acreage smaller and perhaps the damage less?

Ms. COLLINS. We have been doing a lot of work all over for forest health treatments. We might be—that number might be larger if we had not done that. We have examples all over central Oregon, as an example, where we have stopped fires that might have gone further into stands because we had some good thinning around those other stands. We have done that.

So I know that a lot of that good forest health treatment is going on out there. Whether it is aggressive enough, whether it is enough

to do the kind of work that needs to be done, is really a good question.

Senator SMITH. When you gave me that percentage of how many acres have been—not percentage, but the number of acres that have been burned that constituted old-growth, that obviously assumes there is a definition of old-growth. What is that definition?

Ms. COLLINS. It is interesting that you said that, because I kind of got these two larger binders here with 114 definitions that we talked about all over the country for about 6 years. We came up with a compendium, a collection of definitions that relate to species and community types in the nine regions of the Forest Service.

But we know that there is a certain collection of characteristics that are pretty consistent. They are the largest trees on that particular site—

Senator SMITH. What would their age generally be?

Ms. COLLINS. In general, it is all over the place. Aspen can be old at the age of 80 to 100. So each species—and I am speaking and I should be handing this over to the scientists.

Senator SMITH. How about douglas fir? What is old-growth?

Ms. COLLINS. Do you want to answer that one, Russ?

Dr. GRAHAM. Well, again, douglas fir, remember, grows from the Mexican border to the Canadian border nearly to the middle of Wyoming.

Senator SMITH. But Pacific Northwest douglas fir?

Dr. GRAHAM. So what I would say is it can grow—old-growth may be on the West Coast, might be 200 years plus. In the middle of central Idaho, we can have old-growth douglas fir of 400 years. So again, even douglas fir can be maybe as young as 100 years to as old as maybe 400 years.

Senator SMITH. How about ponderosa?

Dr. GRAHAM. Ponderosa pine is another wide-ranging conifer species, again very much like douglas fir. In northern Idaho we might have old-growth characteristics as young as 80 to 100 years. Meanwhile, in southern Arizona and southern New Mexico it might be 200 or 300 years old. Also, you have got to remember in Arizona, the Mogian Rim, a tree gets over about 24 inches in diameter and about 100 feet tall, lightning is going to take care of that old-growth.

Senator SMITH. As a general rule, on the west side of Oregon and Washington and California old-growth would be anything above 100 years?

Dr. GRAHAM. That is usually a good benchmark statement, 100 years.

Senator SMITH. And east side would be 80 and above?

Dr. GRAHAM. Probably 150.

Senator SMITH. 150.

Dr. GRAHAM. But again, you could have, in pinion juniper you might have not those forest structures developing until a much older age. In some ecosystems you might have what would be valued and described as old-growth at a much younger age or a much older age. But those are some ballpark numbers of ages, yes.

Senator SMITH. Would those ballpark numbers in the Forest Service be a consensus opinion? I am really just asking this because—

Dr. GRAHAM. No.

Senator SMITH. No, okay. Would it not be helpful to have a definition that is sort of a reasonable—reasonable people could agree that in these kind of conditions, this number of years constitutes old-growth? Because I just think this is such a moving target, that by some standards you cannot cut anything because it is all old and by other standards it is clearly not.

I do not know how to get my hands around this issue if the experts do not have any consensus, either.

Dr. LEWIS. I remember reading the background of the original definitions in 1989 and every region came in with a different definition. When you refine it to different forest types, you further break it out in various refinement.

Senator SMITH. Do the Federal courts have any definition?

Dr. LEWIS. I do not think anyone has a consistent definition. It is almost like my age. When I was 40 I was not old, but now I am older. It is a relative term and it means different things in different parts of the country and to different people.

Senator SMITH. I guess the reason I am asking what is old-growth and is there a consensus is it sort of answers my next question, which is is there any consensus as to how to manage old-growth for health? You described, Sally, a lot of things that have been done, but does anybody agree on whether what you have done, is it of value?

Ms. COLLINS. Well, I think it depends on whether you are talking about a management question or a research question. I think we have some good research that is beginning to show us that we can manage stands to create these old-growth characteristics more quickly than if we just left them alone, especially if you are talking about a sort of even plantation kind of setting that we are talking about in some of these LSR's that we talked about in central Oregon.

But I think it really is important to think about what do you need these definitions for. We think we need these definitions because it takes that kind of variety and acknowledgment of differences in order to effectively manage them, because the research is different. The research is different on managing LSR's on the west side and the east side of Oregon.

We do not have research, for example, that says thinning LSR's on the east side of Oregon accelerates the old-growth conditions. We do know the research is pointing to that conclusion on the west side. What we know on the east side is it is good at protecting. Because of the fuel breaks that we can create, we can protect the old-growth from getting burned perhaps.

So again, it is very specialized. We really feel like we need to know what these definitions are in order to know what we are managing for and what we want to emulate, and acknowledge those differences.

Senator SMITH. Do you have the authority to set these standards regionally in terms of a forest?

Ms. COLLINS. Yes.

Senator SMITH. Do you feel like, if you have the authority, would it not be helpful to establish a case for your management of the area, whether it is a little or whether it is a lot, that is defensible

in Federal court? Is that important to do? It just seems to me that this is the first order of business, to get our hands around what it is we are even talking about.

Ms. COLLINS. Well, that is why we did this effort, to get these common definitions, because we do think that they are the best we have to go to court or to manage for whatever objectives we come up with in our individual forest plans and our individual regions. We have to have something that we can use as sort of a baseline: This is what old-growth is here.

If we want to recreate it, if we want to move toward it over time, naturally, whatever it is we want, we have to have that as a template, as a basis for doing that.

Senator SMITH. Sally, you are speaking as though you have got this done, but I thought I heard you say before there was no agreement.

Ms. COLLINS. There is a set of agreed upon definitions. But I will tell you, you will have, as in any research community, a lot of lively debate and discussion about it.

Senator SMITH. Would it be helpful if Congress just legislated what it was?

Ms. COLLINS. It is like any science that is constantly evolving. As we learn more, it is more refined. I am answering again a scientific question I should not.

Dr. LEWIS. No, go right ahead.

There are some points that I think we should keep in mind. All of these "old-growth forests" were managed by nature at one time.

Senator SMITH. Yes.

Dr. LEWIS. And in some areas they were replaced about every 300 years by fire. Even if people did nothing, they would come to an end, an end point, and they will have a rebirth and they will develop all over again.

We have managed for certain characteristics, certain attributes that we commonly associate with "old-growth," such as large trees, habitat for certain species. We can do that and we have demonstrated that through some of the demonstration ecosystem management projects, and we think that this might be a way to try to enhance and accelerate some of those attributes and qualities that we look for and that we value.

You wanted to know what could we do to manage. It is a fact that these old stands need to be protected from invading species of insects, disease, we have wind-throws. Anything we can do to actively manage them to allow them to prolong their life spans in a particular state or appearance, then I think that is a good thing.

Senator SMITH. I guess, Mr. Chairman, the only thing I would ask is is there anything that we can do that could be helpful to you in resolving this debate for purposes of setting a standard, which is what laws are, by which we judge conduct? Do you need Congress to do anything, or should we just be quiet?

Ms. COLLINS. You go ahead.

Dr. LEWIS. I think someone in some of this briefing material quoted Jack Ward Thomas as saying that these systems that we are managing are incredibly complex. There is not a simple answer. There is not an answer that can apply in the States of Oregon, Washington, all the way to Mississippi, where I reside from.

Scientists will differ. Scientists in this room today as we speak probably do not have the same definition of old-growth. I wish you could.

Ms. COLLINS. I would like to just say one thing about that, because I do think—and when Congressman DeFazio was talking about those, earlier talking about those three different examples of forests and what they looked like—we have to be able to experiment. We have to be able to do the active management. We have to be able to get out on the ground and try some things.

I can say as a frustrated manager, trying to do that sometimes we ended up going to private land to try some of those kind of different prescriptions, to show what it looked like to do different things on the land. So there are probably a variety of things that we can work on together that make some of that easier for us, and we would certainly support these ideas that you have for LSR management. We are really right behind that.

Senator WYDEN. I thank my friend for making a number of important points.

Let me give you a sense of what we are going to try and do. Senator Craig and I have talked about it and I have talked generally about the issue with Senator Murkowski this morning. You are absolutely right, this question of getting the definitions is going to be central. I think it is fair to say what we have got at this point on this issue of old-growth definitions are those two tomes that Sally must be carrying around in a wheelbarrow or somebody else uses for their morning workout.

What we have asked the agency and what Ms. Collins has agreed to do is to give us within 2 weeks a set of the areas where there is agreement on the definitions of old-growth and then the areas where there is disagreement, so that we can then work with the agencies to try to get the agencies to bring us a common position on old-growth.

I was just thinking about the prospect of you and I at our regular Oregon Senate lunch on Thursday trying to do this ourselves in the Senate Dining Room, and I was cringing at the prospect.

So what we are going to do is get within 2 weeks the Forest Service judgment about where there is common ground, where there is not common ground.

Ms. COLLINS. Or maybe those things, if I might add, that we have some common ingredients that I think Robert started talking about prior to you arriving, Senator. There are some common ingredients and there are some of those that vary by ecosystem type that are common, that vary that are common. So I think that is what we can get to you in a couple weeks.

Senator WYDEN. That is what we will look for. Know that the reason for asking you to make sure that you are coordinating this work with particularly Fish and Wildlife Service and NMFS is not just that that has very often been the stumbling block when we go later to try to put together some agreement on these issues, but those agencies contribute important matters such as habitat with respect to old-growth and take you beyond just the question of age, which is what people normally think about when they think about old-growth.

So we are asking you to do that for a reason that relates directly to trying to get our arms around these terms.

Unless my colleague has anything else he wants to add, we will excuse you at this time.

Ms. COLLINS. Thank you.

Senator SMITH. Thank you.

Senator WYDEN. Thank you.

Our next panel, Jerry Franklin and Dr. Tom Bonnicksen.

[Pause.]

Senator WYDEN. Gentlemen, we welcome you. Dr. Franklin, this testimony reminds me of the song, "We Have Passed This Way Before." It seems that after years and years of pounding away at this, much of what we talked about a decade ago is still contentious.

I think, knowing you, we appreciate your willingness to look at the longer range. That is what I want to try to do here, in hopes that we can take steps that really will be significant for decades to come. Why don't you give us your thoughts as to how to get there.

STATEMENT OF JERRY F. FRANKLIN, PROFESSOR OF ECO-SYSTEM ANALYSIS, COLLEGE OF FOREST RESOURCES, UNIVERSITY OF WASHINGTON, SEATTLE, WA

Mr. FRANKLIN. Thank you, Senator. I am always pleased the work with you.

Senator WYDEN. Thank you.

Mr. FRANKLIN. I have provided you with some written testimony and I am not going to read that. I do want to point out I have also provided you with a paper that I prepared on thinning in late successional reserves.

Senator Smith, I would like to point out we also provided the committee with a reprint of an article that is about to be published in a scientific journal on the development of douglas fir stands, coastal douglas fir stands. That provides I think a lot of answers to the questions you have raised about when is a forest mature, when is a forest old, how do you recognize it. So I just mention that that is part of the deposit that I have made.

Old-growth forest ecosystems are distinctive and important ecosystems in essentially all forested regions in the world. In temperate regions we tend to be concerned about them because they are dramatically reduced in extent, yet they are very important because of certain organisms and processes that occur there.

There is a scientific consensus regarding the fundamental nature of these forests, and I think the folks that preceded me gave you some sense of that. Certainly they include old, decadent large trees for the site on which they are occurring. But in terms of a generic characterization of old-growth forests, we can say that they are structurally complex for the type and site, which means there is a lot of different varieties of structures; trees of various sizes and conditions and states; and yes, there is a lot of standing dead and down wood material. Those are very important structural elements as well.

In addition to the variety of structures, however, there is also a lot of complexity in the spatial pattern in which those are ar-

ranged. There is a lot of stand heterogeneity. Natural stands are heterogeneous in structure, not homogeneous.

Some of these stands are very long-lived. In the case of coastal douglas fir forests, unless they are destroyed by fire—and many are not—they probably have a span of at least 1,200 years with a douglas fir component as a part of them. So since most of our old-growth forests in western Oregon and western Washington are about 500 years old, we have a lot of time in which we can expect them to make a contribution and provide big old douglas firs.

Now, there are a lot of issues with regards to definitions. This is something that we are all going to struggle with, because it is not simple and simple answers could lead the bad policy. You do have to do it by each forest type and region, albeit there are these generic attributes of these forests.

You do need to recognize that probably structural complexity is a better measure than age of whether a forest is mature or old.

Third, and this is the tough one, it is probably more useful to recognize that there is a gradient of old-growth development rather than thinking simply in terms of black or white, that it either is or it is not. It is sort of like us as human beings: Are you young or are you old? Well, you probably exhibit attributes of both, and it is an evolutionary process and really, except in a very legal way, we never say at some point, you are old now. We know this comes on gradually.

We also need to be aware that when we deal with fire-prone forests like the east side forests we really have to scale up our consideration of an old-growth forest stand to include the entire patch mosaic that is ecologically the old-growth stand.

Definitions are going to be tough. One last comment about that: Do not make the mistake of thinking that clearcuts are equivalent to natural early successional conditions. They are not. They are extremely contrasting with the kind of early young forest conditions that nature created. If you do not believe it, go look at the Warner Burn on the Willamette National Forest.

You asked me to address the question of whether Federal agencies are making major contributions to old-growth and old-growth protection, and they very much are with the policies that have been adopted. These include reserve-based strategies in some cases and old-growth emphasis areas, as in the case of the Sierra strategy that was just adopted. They are also doing it with various kinds of restoration programs and with the modified management that they are doing on their ordinary forest lands, things like structural retention as a part of their harvesting regimes.

Old-growth protection can be integrated with commercial activities, no question in my mind about that. We do it in at least two ways. One is with restoration, and we have talked about that: the thinnings, where our goal is to restore late successional conditions in these LSR's and in the stands. Do look out for setting timber targets because you do not want to create incentives just to produce volume as opposed to restoring structure.

We do also need to be aware in these thinning activities that what we are doing is in fact trying to increase the structural complexity, including the heterogeneity. So traditional activities as we would do for commercial timber production do not translate directly

to what we want to do in habitat restoration, but it will produce commercial wood volumes.

In addition to that, we have an outstanding opportunity to integrate production of commodities with restoration in our active management of forests in areas that are subject to chronic fire. This is a case where potentially there is a high level of fit between producing some commodities and restoring the kinds of processes and structures that were characteristic of the pre-settlement forests.

I see my time is up.

Senator WYDEN. Well said.

Dr. Bonnicksen.

[The prepared statement of Mr. Franklin follows and the information referred to is retained in subcommittee files:]

PREPARED STATEMENT OF JERRY F. FRANKLIN, PROFESSOR OF ECOSYSTEM ANALYSIS,
COLLEGE OF FOREST RESOURCES, UNIVERSITY OF WASHINGTON, SEATTLE, WA

My name is Jerry F. Franklin and I am Professor of Ecosystem Analysis in the College of Forest Resources, University of Washington. For over 40 years I have studied the ecology and management of natural forests throughout North America, Japan, Australia, and temperate South America. Approximately half of the 300+ articles and books that I have authored or co-authored deal with old-growth and other natural forests

STATUS OF OLD-GROWTH FORESTS ACROSS THE U.S.

Old-growth forests, defined from an ecological perspective, exist in many areas and forms throughout the United States. The ecological conditions in old-growth forest ecosystems (i.e., composition and structure) do vary substantially with:

- Region ("biome"), reflecting variability in climate and native biota;
- Site conditions within a region, particularly with productivity levels; and
- Disturbance regime, such as chronic vs. catastrophic fire.

Old-growth forests were much more widespread in pre-settlement times than currently, although the percentage varied by biome and disturbance regime. In the Pacific Northwest the scientific consensus is that the extent of old-growth forests has varied between approximately 1/3 and 2/3 of the forested landscape during the last 500 years. Currently both the extent and quality of old-growth forests vary substantially among regions reflecting the type and timing of past human activities.

CHARACTERISTICS OF OLD-GROWTH FORESTS

A scientific consensus exists regarding the fundamental nature of old-growth forests as a result of extensive research conducted during the last 35 years, primarily under sponsorship of federal resource management agencies and National Science Foundation.

Old-growth forests are ecosystems that have had time to undergo extended structural development and, often, compositional change. Old-growth forests typically do include some trees that are old, decadent, and large for the forest type and site condition. More generally old-growth forests are distinguished from younger and, especially, intensively managed forests, by high levels of stand structural diversity. This structural complexity is recognizable as diversity in:

- Structural features, including live trees of widely varying sizes and conditions and standing dead trees and down logs of diverse decay states; and
- Spatial arrangement of structures, including presence of multiple or continuous canopy layers (vertical heterogeneity) and of open and densely-shaded patches (horizontal heterogeneity).

Both the richness of individual structures and the within-stand spatial heterogeneity in structure are important features of essentially all old-growth forests in the temperate zones, regardless of whether they are characterized by chronic or catastrophic disturbance regimes. Details of structure do vary with forest type, site productivity, and disturbance regimes.

Old-growth forests are not necessarily "climax" forests of shade-tolerant species. In fact, most old-growth forests include significant representation of shade-tolerant, pioneer tree species and always have. Old-growth forests do incorporate the effects of chronic disturbances, such as low- to moderate-intensity fire and windthrow

events; in fact, these disturbances create much of the spatial heterogeneity that is an important feature of old-growth forests.

Old-growth forests are known to fulfill important and distinctive ecological functions. Provision of habitat for many specialized animal and plant species is one of the old-growth forest functions and is related directly to the structural richness (diversity of structural “pieces” and complex spatial arrangements) found in old-growth forest. Other important functions have to do with regulation of hydrologic processes (including flood events), sequestration of carbon, and maintenance of soil and nutrient capital.

DEFINITION OF OLD-GROWTH FORESTS

We have an adequate knowledge base to provide working definitions of old-growth forests for most forest types. Definitions already exist for many major forest types in the US and can be used as starting points for development of a national policy. Each major forest type does need to be considered individually. Furthermore, definitions need to reflect the substantial variability that can occur in old-growth forest conditions even within a forest type, such as the Douglas-fir forests of the Pacific Northwest, mixed-conifer forest of the Sierra Nevada, or longleaf pine forests of the southeastern United States.

Two significant adjustments are needed in current approaches to old-growth definition in the view of many knowledgeable scientists, including myself:

- Absolute (black-and-white) definitions of old-growth need to be replaced by indices recognizing relative levels of late-successional function and structure; and
- Old-growth definitions for chronically perturbed forest types (e.g., those subject to chronic, low- to moderate intensity fire) need to recognize and incorporate the spatial complexity (patch mosaic) of these stands.

Regarding the first point, scientists and managers are finding it more useful to recognize a continuum or gradient of structural complexity (i.e., “old-growthedness”) in place of definitions that categorize forests as either “old-growth” or “not-old-growth”. Scientifically, this is accomplished by creating and utilizing indices based upon multiple structural features of the stands. Examples are provided by studies in Douglas-fir forests in the Pacific Northwest (e.g., Franklin and Spies 1991) and the Sierran mixed-conifer forests (Franklin and Pites-Kaufmann 1996). Creating and applying black-and-white (either/or) definitions for old-growth forests recognizes neither 1) the continuum of natural stand-development processes (and, consequently, ecological function) and 2) the contribution that stands with some old-growth structures and attributes make to old-growth functioning in landscapes.

In the Pacific Northwest (and probably elsewhere) it may be useful to refine the broad categories of stand development utilized in policy development. We have been utilizing “late-successional” as the label for all forests over 80 years old with old-growth forests as a subset of the late successional and everything else as “early-successional” forest. Adopting early-, mid- and late-successional as broad categories of stand development while recognizing that these are segments of a continuum in structural complexity may help clarify the important contributions made by each of these stages to biological diversity and ecological functions. For example, mid-successional forests are typically undergoing development of structural complexity with the formation of multiple canopy layers and canopy openings or gaps (Franklin et al. 2001). Such stands contribute habitat for many late-successional species even though they have much lower levels of woody debris (snags and logs) and of decadence than old-growth forests. Surprisingly, early-successional forests developed following natural disturbances, such as wildfire, often have high levels of structural complexity in the form of snags and down wood, and provide important habitat; natural early-successional stands contrast greatly with clearcuts and should not be equated with them in policy analyses.

OLD-GROWTH PROTECTION BY FEDERAL AGENCIES

Federal agencies are making major contributions to old-growth forest protection by:

- Adopting plans that protect much of the remaining old-growth forest; and
- Implementing programs to restore late-successional conditions.

These contributions are coming primarily from USDA Forest Service but with significant contributions from USDI Bureau of Land Management in the west and USDI National Park Service throughout the nation. The federal government has a unique role in conservation of old-growth forests in many parts of the United States; most significant remaining examples of such forests are confined to public lands. Several regional strategies have been adopted that protect most remaining old-

growth forests on federal lands, including the Northwest Forest Plan (NWFP) (all federal forest lands within the range of the northern spotted owl) and Sierra Nevada Forest Plan Amendment (national forests in the Sierra Nevada and Modoc Plateau). Plans to conserve old-growth forests are also being adopted on other federal ownerships, including the northeast and southern Appalachian Mountains.

Federal agencies have also developed and implemented programs to restore late-successional forests and conditions. The silvicultural activities undertaken to accelerate development of late-successional structure in young, second-growth stands located within Late Successional Reserves (LSRs of NWFP) are one example; this is being done in order to expand availability of such habitat and to restore the integrity of the LSR landscapes. Programs for treatment fire fuels, including prescribed burns, are being adopted and implemented in old-growth forest types that were naturally subjected to frequent light-to-moderate intensity fire, such as the pine and mixed-conifer forests found in western North America.

INTEGRATING OLD-GROWTH PROTECTION AND COMMERCIAL ACTIVITIES

We can protect and even restore old-growth forest conditions and still provide for commercial uses of forests, albeit not on every acre. The strategies adopted to do this need to reflect differences in the ecology and history of the subject forests, however: one prescription is not adequate to address the diverse challenges of maintaining old-growth forests and habitats. For example, fuel hazard reduction and prescribed burning are not appropriate for old-growth forests in the coastal Douglas-fir forests of northwestern Oregon and western Washington.

Protection of areas of existing, old-growth forest ("reserves") is central to any regional forest strategy that is intended to conserve biological diversity and ecological processes (Noss and Cooperrider 1994). There is a scientific consensus regarding the need for reserves but not about the extent of reserves that are needed; the extent of reserves needed is highly dependent upon the level of risk to late-successional species that is acceptable, which is, of course, a social rather than a scientific decision. Reserves are viewed as critical because existing old-growth forests have the highest probability of providing the habitat needed by old-growth related organisms. Retaining such forests provides lower risks to old-growth organisms (i.e., higher certainty of sustaining these organisms) than assuming that suitable habitat can be re-created in managed forests. In effect, reserves are the best insurance against failure.

Some reserves need to be actively managed to maintain their old-growth values while others essentially take care of themselves. For example, old-growth forests on sites that were naturally subjected to frequent light to moderate fire regimes will often need active management to restore and maintain appropriate fuel loadings and fire. This is recognized in the guidelines for management of Old Forest Emphasis Areas of the USDA Forest Service' Sierra strategy and has been practiced for many years in the national parks of the Sierra Nevada by the USDI National Park Service.

Using silvicultural activities to restore and expand the forest area with old-growth characteristics is often appropriate, including the use of prescribed fire where appropriate (e.g., pine and mixed-conifer forests). Creative "thinning" projects in young stands in NWFP LSRs provide an excellent example of the possibilities (Franklin 2001). These include such practices as:

- Variable-density thinning to increase stand heterogeneity, including canopy openings and heavy cover;
- Thinning some dominant trees to release and maintain shade-tolerant conifers and hardwoods;
- Creation of coarse woody debris (snags and logs on the forest floor); and
- Underplanting of shade-tolerant species.

Such activities can help advance structural development in stands and restore the integrity of the late-successional landscapes. These silvicultural projects can also yield significant amounts of small- and medium-diameter timber but we need to avoid setting timber targets that could obscure ecological goals and create distrust among stakeholders. Dr. Andrew Carey has been a leader in conceptualizing integrated approaches to biodiversity and wood production, research sponsored in part by the congress (e.g., Carey et al. 1999).

I do believe that sustained flows of wood products could come from management programs to restore and maintain old-growth forest conditions. Programs to restore late-successional habitat in coastal coniferous forests (outlined in the preceding paragraph) can provide such flows for several decades. One of the best long-term opportunities would be continuing programs to restore and maintain old-growth conditions in forest types naturally subject to frequent, light- to moderate fire regimes,

such as the ponderosa pine and mixed conifer forests of the Sierra Nevada and intermountain west. Incidentally, any “diameter limit” in such programs should be keyed or indexed to variations in regional and local site conditions; for example, appropriate diameters for removal in southwestern ponderosa pine forests are very different from appropriate diameter limits for mixed-conifer forests on productive sites in the Sierra Nevada.

EFFECTS OF CHANGES IN FOREST POLICY

Changes in forest policy in the last two decades have altered completely the degree to which old-growth forests are being protected. They are also resulting in restoration of late-successional forest functions to a much broader area of the landscape. Current national forest policies emphasize ecological sustainability in contrast to past policies, which emphasized production of commodities with attempts to mitigate impacts on ecological processes and biodiversity.

This change in forest policy has profoundly changed the prospects for old-growth ecosystems and related species in many regions, such as the Pacific Northwest. The Northwest Forest Plan has provided the essential central element of a regional forest strategy. It is a robust plan from an ecological perspective, proscribing traditional timber harvesting on over 80% of the 24.4 million acres of federal forest land within the range of the northern spotted owl. Organisms and ecological processes dependent on late-successional forests have unquestionably been well served by the NWFP. Industrial forest landowners and state trust land managers have been provided with significant regulatory stability that has allowed them to develop approved Habitat Conservation Plans in significant measure because most old-growth needs are provided for on federal lands.

This is not to say that the NWFP is working perfectly. For example, the plan was intended to be adaptive. In application there have been few opportunities for flexibility and adaptive learning. Almost all participants in implementation—from the agencies to stakeholders to the courts—have contributed to this rigidity. While intellectually appealing adaptive management is actually threatening to stakeholders since it makes uncertainty in outcomes explicit! Adaptive Management Areas, which were supposed to be focal points for innovation and experimentation, have failed to fulfill their promise, partially because of a lack of institutional, including funding, support. We need to restore learning and adaptation to a central role in the NWFP but that will require congressional as well as agency and stakeholder support.

CONCLUSIONS

Old-growth forests are important and distinctive ecosystems in all forested regions of the world, recognizable on the basis of their structural complexity and providing unique ecological functions, including habitat for tens of thousands of specialized organisms. It is possible to integrate programs to maintain and restore old-growth forest ecosystems with commercial uses of forest lands, albeit not on every acre. Active management will be necessary to maintain old-growth forest in some landscapes. Current federal forest policies have dramatically improved the prospects for old-growth ecosystems and related organisms in many parts of the United States and have provided the core of regional strategies to conserve biodiversity to which other landowners can tier their activities. Adaptive approaches are essential but are proving difficult in practice.

STATEMENT OF DR. THOMAS M. BONNICKSEN, PROFESSOR, DEPARTMENT OF FOREST SCIENCE, TEXAS A&M UNIVERSITY, COLLEGE STATION, TX

Dr. BONNICKSEN. Thank you, Mr. Chairman. My name is Dr. Tom Bonnicksen. I am Professor of Forest Science at Texas A&M University. I have spent my entire career, actually 32 years now, concentrating on the history of the native forests of North America in managing and sustaining them. Recently, last year, I published a book documenting the history of our forests from the Ice Age until the time they were discovered by European explorers.

One of the things I can tell you about my experience over the last 32 years is that, frankly I have not seen any intellectual progress in this discussion. I do not think anything has changed from the heady days of protest and preservation that I experienced when I

went to school at the University of California-Berkeley. Nothing has changed. The arguments are the same. There has been very little creativity.

As a matter of fact, the Scandinavians and the Canadians have been so far ahead of us on this issue—and they come here to get an education; they go back to think about it—that we really ought to be looking elsewhere for our ideas than right here at home.

I will give you one example. This idea that you walk into a douglas fir forest that is a dog hair thicket, wave your hand and say, this is unnatural and we do not want this. I have studied these forests. A dog hair thicket in a douglas fir forest is natural. They occurred historically. They are an integral part of this forest. You do not just wave your hand and say it is unimportant and in fact wave your hand and say all the successional stages of a forest are unimportant except old-growth, not if you really care about forests. Maybe if you are concerned about politics you can do that, but not forests.

What is old-growth? It is not defined. There is no consensus in the scientific community or anywhere else, because it was a political term designed for the express purpose of arguing the case for setting aside forests in the Pacific Northwest. Since it served political purposes, it cannot in my judgment serve scientific purposes.

The Forest Service has 114 definitions. There are 76 scientific definitions in the literature, and it is a total waste of time to even come up with a definition because it is a political, not a scientific, term.

If you want to really make progress, I suggest that you change future hearings to avoid the term “old-growth” and start considering the idea that the Congress on the other side is considering, which is H.R. 2119, which is using our historic native forests as a model for future forests and managing whole forests, instead of just this undefinable part of a forest called old-growth.

But even if we use this popular definition that says it has got to have big old trees and lots of layers and lots of old stuff laying on the ground and we tried to manage our forests to achieve that, what are we going to get? Well, first of all, we are not going to get forests that look like anything we have had in North America for the past 18,000 years. We are going to get artificial forests that never existed and could never exist unless Congress passed a law to create them.

To me that is a tragedy, because I care about our historic forests in North America, keeping them, sustaining them, bringing many of them back so that our children and our grandchildren, of which I have five, can see and experience them for themselves.

For example, in the Pacific Northwest very few douglas fir forests ever lasted 1,200 years, I can assure you of that. The fire cycle is 400 years. Most of them are older than they ever would have been. If we actually tried to keep them indefinitely, they would not be douglas fir forests any more; they would be western hemlock forests. In New England, the white pine forests would be maple forests.

The forest cannot remain the same. It will just simply succeed into something that can replace itself and it will look like nothing that ever existed before except on a very tiny scale.

Frankly, if we want old-growth or whatever this thing is that we want, older forests, we are going to have to manage them. We cannot just put a fence around them and say that we are going to get them by leaving them alone, because what you are going to get is probably not what you want. I do not think you want the entire Sierra Nevada west slope covered with a white fir forest. I do not think you want western hemlock covering the entire Pacific Northwest or douglas fir replacing all the ponderosa forests or maple replacing all the oak forests in the East. I do not think that is what you want. I certainly do not want it.

So if we are going to get it, we are going to have to manage it, and we are going to have to manage it in a way that simulates what happened historically. Many of these forests are very, very old indeed if you do not look at the age of the trees as well. Some of them do not actually need any management.

I can give you an example, the high mountain balsam fir forests in the Northeast. You do not have to touch it. It cycles every 60 years because of wind and ice. It has been doing it for 10,000 years. That is a great forest to leave alone, but there are not very many forests like that.

I care about real forests. I would like to sustain real forests and that is going to require management. Frankly, I suggest we purge the word “old-growth” from our vocabulary and let us think about forests as they really were historically and then use science and logic, dispassionate logic, to manage them and get them back. Let us look at what they do in Scandinavia and Canada to achieve that, because they care about these old forests as much as we do, but it seems like they are not hindered as much as we are.

Frankly, we are like a car that is trying to move forward with a brake, the emergency brake, full on, and that brake is the idea of old-growth and that it is the only important part of a forest to preserve. We do not know what it is and it ignores everything else. I think that is sad. Even if we knew what it was as described popularly, historically it was always just a small part of the forest anyway, because these forests were mosaics—and in the Pacific Northwest sometimes a 100,000 acre patch—of all different sizes.

In the Sierra Nevada, for example, only 18 to 21 percent of that forest was like old-growth, and even in the douglas fir forest it only was 42 to 60 percent.

So I think we should think about whole forests and not old-growth, and that is what I would suggest for your next meeting if you want to make progress. Thank you.

[The prepared statement of Dr. Bonnicksen follows:]

PREPARED STATEMENT OF DR. THOMAS M. BONNICKSEN, PROFESSOR, DEPARTMENT OF FOREST SCIENCE, TEXAS A&M UNIVERSITY, COLLEGE STATION, TX

INTRODUCTION

My name is Dr. Thomas M. Bonnicksen. I am a professor in the Department of Forest Science at Texas A&M University specializing in restoration forestry. I have conducted research on restoring and sustaining America's native forests for more than thirty years. I have written over one hundred publications and I authored the book titled *America's Ancient Forests: from the Ice Age to the Age of Discovery* (Copyright January 2000, John Wiley & Sons, Inc., 594 pages). The book documents the history of North America's native forests. It gives special emphasis to the way our native forests appeared at the time of European settlement and the role Native

American's played in their development. Additional biographical information is available in the biographical summary at the end of this document.

OUTLINE

1. What is old-growth?
2. Problems with the term old-growth
 - a) The popular definition of old-growth
 - b) The idealized old-growth forest
 - c) The real forest
 - i) Forest age
 - ii) Forest structure
 - iii) Area of old-growth
 - d) The undisturbed forest
3. Sustaining idealized old-growth forests
 - a) Accelerating the decline of historic native forests
 - b) Creating artificial old-growth forests
4. Sustaining real old-growth forests

WHAT IS OLD-GROWTH?

In 1989, Malcolm Hunter published a paper in the *Journal of Forestry* that stated, "There is no generally accepted or universally applicable definition of old-growth." His conclusion is still true.

Old-growth remains undefined because it is not a scientific term. It is a popular term that cannot be generalized to all types of forests. Consequently, a scientist who refers to old-growth in a paper must provide a unique definition to clarify what is meant. This helps to explain why there are at least 75 definitions of old-growth in use today. None of these definitions achieved general scientific acceptance, including the definition used by the Society of American Foresters.

So, what is old-growth? It is what anyone who uses the term says it is, and that changes from person to person. Old-growth emerged from the political campaign to protect uncut forests in the Pacific Northwest. Since it served political purposes it is not surprising that it cannot serve scientific purposes.

PROBLEMS WITH THE TERM OLD-GROWTH?

The Popular Definition of Old-Growth

The most popular definition of old-growth includes 1) large old trees in the overstory; 2) several layers in the canopy; 3) a variety of tree species; 4) many standing dead trees; and 5) many dead and decaying logs on the ground. It also requires that to qualify as old-growth a forest must be undisturbed by human activity. At the very least, it requires that a forest be left undisturbed in the future in order to develop old-growth characteristics.

The Idealized Old-Growth Forest

To many people, the popular definition of old-growth represents an idealized view of how a natural forest should look. This ideal means that a whole forest should look like old-growth. It also represents a belief that forests of large old trees covered the pre-European settlement landscape. However, most of America's historic forests were dramatically different from this ideal.

The Real Forest

Forest Age: Most historic native forests did not fit the idealized old-growth image. While some forests such as high mountain balsam fir in the Northeast still look the way they did 10,000 years ago, the trees that make up the forest succumb to wind and ice in 50-60 years. Likewise, most jack pine forests only lived about 60 years before being destroyed by fire yet these forests have existed for about 8,000 years. Similarly, longleaf pine forests in the Southeast are about 5,000 years old. However, the trees mature at 150 years and seldom live more than 300 years. Thus, what is old depends on the history of the forest and longevity of the trees of which it is composed.

Forest Structure: Such structural attributes as layering in the canopy and dead trees are just as poor indicators of old-growth as the age of the trees. Most of America's historic native forests did not have this structure, although there are a few exceptions. They include western hemlock, white fir, beech-maple, and maple-basswood forests. These are self-replacing or climax forests. The young trees that fill openings created by the death of old trees are the same species as those that fall. The trees can replace themselves because they tolerate dense shade and reproduce

on deep litter. Trees of all ages stand in these forests, snags are abundant, and the ground is cluttered with decaying logs.

Self-replacing forests take many years to develop. Therefore, most of them grow in areas protected from fire. However, fires were common in the majority of America's historic forests and they occasionally burned self-replacing forests. Windstorms, insects, and other disturbances also took their toll of these forests. Therefore, no forest consisted entirely of old-growth, not even self-replacing forests.

Self-replacing forests were limited in extent and they did not consist entirely of large old trees. For example, old trees only covered 63-87% of the area within self-replacing maple-basswood and beech-maple forests. Likewise, old trees only covered 56-77% of the area within the self-replacing western hemlock forests. The remainder consisted of fresh openings filled with herbs, shrubs, or young trees, dense patches of middle-aged trees, and many other stages of development scattered throughout the forest.

Area of Old-Growth: Large old trees occupied only a small part of the majority of historic native forests because forests are made up of a mosaic of patches of various sizes and shapes. Each patch is in a particular stage of recovery from a destructive event that creates an opening in the forest. Some freshly opened patches contain herbs or shrubs, while others contain young, middle-aged, or old trees.

As a rule, the proportion of a forest mosaic that consists of older trees is greater when disturbances such as fire occur infrequently. This means that the popular definition of old-growth only applies to the oldest or most decadent patches in a forest rather than a complete forest, and the proportion varies by forest type.

The idealized image of whole forests composed of old-growth fails to adequately describe even the Pacific Douglas-fir forest that inspired the term. Historic wet Douglas-fir forests in the Pacific Northwest contained about 42-60% older forest spread over the landscape in large patches. The area varied because fires did not always burn the same amount of forest. Patches of older forest covered only about 12-23% of the landscape in drier southern Pacific Douglas-fir forests where fires were more frequent.

The same is true of other historic native forests. Fires were frequent in historic mixed-conifer forests in the Sierra Nevada. Therefore, patches were small and older forest covered only about 18-21% of the landscape. Even so, the forest still looked like old trees dominated it because the patches of older forest were small and well disbursed among patches of younger trees. Similarly, ponderosa pine forests in the Southwest and Rocky Mountains contained patches of older forest that covered about 17-40% of the landscape. Lodgepole pine forests in the northern Rockies consisted of about 30% older forest. In the Great Lakes region, jack pine forests contained about 23-43% older forest. In the East, the red spruce-fir forest had about 55-60% older forest because fires were infrequent and large.

The proportion of a forest that fit the popular definition of old-growth in pre-European settlement times was not only less than the area covered by the whole forest, but it was often only a small part of the proportion of older forest. Older forests include the last three stages of development while old-growth only describes the last two stages. The old pioneer forest is the earliest stage of an older forest. It consists of old pioneer trees that became established when seedlings filled a fresh clearing. These pioneer species such as pine and Douglas-fir regenerate in openings because they are adapted to growing in bright sunlight on bare soil. They cannot grow in the thick litter and shade of dense forest.

Old pioneer forests are open. They do not have layers in the canopy nor do they have many standing or fallen dead trees. Therefore, an open old pioneer forest is old even though it does not fit the popular definition of old-growth. Even so, some old pioneer forests, especially pine and oak forests, stayed open for centuries because frequent light surface fires kept the understory free of young trees and woody debris. Only the last two stages of forest development—old transitional and self-replacing forests—fit the popular definition of old-growth.

An old transitional forest is decadent. It is an old pioneer forest that is breaking apart and nearing the end of its existence. The overstory trees are dying and being replaced by more shade-tolerant species. An old transitional forest is the next to the last stage of development. It has multiple layers, and standing and fallen dead trees are prominent. An old transitional forest is old-growth.

When the last old pioneer tree topples, all that remains is a forest composed of shade-tolerant trees of all ages. This is the last stage of development and it is perpetually decadent. It is a self-replacing forest and it is also old-growth.

The Undisturbed Forest: Finally, the popular definition of old-growth assumes that humans played no role in the development of historic native forests. This myth persists in spite of overwhelming historical and scientific evidence. The last time

such forests existed in North America was during the last interglacial about 122,000 years ago.

Paleoindians pushed southward between the ice sheets about 14,000 years ago. They arrived in southeastern Wisconsin about 13,400 years ago, and they occupied all of North America between 12,000 and 11,000 years ago. At the time of European exploration, as many as 12 million American Indians were actively managing every corner of the continent. Thus, the original forests described by the first European explorers and settlers were shaped by thousands of years of Indian use and management.

These people were not passive occupants of forests. They created and deliberately maintained the forests that we value today, thanks largely to the use of fire, their most powerful tool for producing the resources they needed to survive. Indian-set fires were one of nature's ways of clearcutting forests. Indians burned large patches in northeastern oak forests to clear fields for planting. They moved to new areas when crop yields declined and all the firewood was gathered from surrounding forests. Their abandoned fields helped to regenerate new oak forests. Some Indian-set fires also went out of control and escaped into adjacent forests. Many of these came from abandoned campfires. Such accidental fires helped to thin forests and create openings where pine trees and other pioneer species could grow.

Almost no part of the country was unaffected by Indian-set fires. Indians burned forests in California, the northern Rocky Mountains, the Southwest, the Northwest, and the Midwest. They doubled the frequency of fire in many forests.

There are at least 62 documented reasons that Indians burned forests. For example, Indians set fires to reduce insect pests, keep forests open for easy travel, and stimulate the growth of shrubs and grass for big game. They also used fire to improve the growth of berries and to reduce fuels around campsites for protection from wildfires. The Maskouten Indians who lived along the Fox River in Wisconsin used fire so often that Father Pere Marquette knew them in 1673 as the "Fire People." Miwok and Monache Indians burned forests in California's Sierra Nevada to regenerate and protect black oak trees that produced the acorns that were their principal source of food.

They also used fire to flush game and clear underbrush that could hide their enemies. In the Pacific Northwest, Indians burned Douglas-fir and pine forests to make it easier to hunt deer and find wild honey and grasshoppers. Fires set by Indians to improve feeding grounds for wild game also maintained the pine-hardwood forests in north central Minnesota. Altogether, Indian-set fires helped to create and maintain about 87% of America's historic native forests.

Thus, the forests and the Indians sustained one another. Remove the Indians and the forest and the wildlife must change. They were inseparable. There is no doubt that American Indians were an integral part of America's historic native forests.

SUSTAINING IDEALIZED OLD-GROWTH FORESTS

Historic native forests differed markedly from the sentimental view some people nurture today. The management practices of American Indians and their ancestors, and the pervasive effects of insect and disease attacks, lightning fires, and other forces shaped America's historic forests and kept them beautiful and diverse. Trying to protect forests that currently fit the popular definition of old-growth, or creating more such forests, will accelerate the decline of America's historic native forests and replace them with artificial forests.

Accelerating the Decline of Historic Native Forests

In the East, even though trees are becoming denser, stately forests of white pine no longer cover large areas as they did in pre-European settlement times. Protecting them from disturbance to create old-growth will ensure that they never recover. Similarly, the oak-chestnut forest is nearly extinct and leaving it alone cannot restore it. Sugar maple and red maple also are taking over northern and eastern hardwood forests and replacing oak—our national tree. Continued protection will also prevent oak from returning to these forests. Eventually, they will be converted to self-replacing maple forests.

In the South, the vast longleaf pine savannas that spread over much of the landscape are nearly gone as well. This loss is especially tragic because the historic longleaf pine forest was not only beautiful but it also had the highest number of plant species of any forest in North America. In the Midwest, we have lost most of the oak-hickory savanna that once fringed the Great Plains and held early travelers spellbound because of its beauty and richness of wildlife. Neither of these forests will recover if left alone.

In the Inland West, juniper is spreading within pinon juniper woodlands and replacing grasslands. Similarly, once open stately groves of ponderosa pine are becom-

ing so thick with small trees that grass and wildflowers can no longer grow within the forest. Because of increases in the density of pine and other conifers, aspen forests are rapidly disappearing as a distinct forest type throughout their range. In addition, white fir is replacing Douglas-fir forests in the Southwest, and spruce and fir are replacing lodgepole pine and western larch forests in the northern Rocky Mountains. Like most of America's historic native forests, these forests too will not recover if left alone.

In California and Oregon, thick forests of short lived and small white fir are replacing what were once open and patchy forests of ponderosa pine, giant sequoia, and other conifers. This invasion of white fir was unanticipated when Native Americans were removed from these forests in the 19th century and fires were put out. Complete protection will ultimately lead to the replacement of the original pioneer forests by self-replacing forests of white fir.

Creating Artificial Old-Growth Forests

In the Pacific Northwest, for example, about 42-60% of the historic Douglas-fir forest consisted of old-growth, but the Forest Service plan calls for increasing it to 73% in reserves. If they succeed in protecting the forest for several centuries, a self-replacing forest of western hemlock that covers nearly 100% of the landscape will eventually replace it. This is a monumental change from natural conditions where only about 4% of the wet Douglas-fir forest consisted of patches of self-replacing western hemlock forest.

The same thing is happening in the Sierra Nevada. The U.S. Forest Service Region 5 plan adopted in 2001 intends to accelerate the invasion of white fir into pioneer forests in order to create huge old-growth reserves. The Forest Service plan calls for increasing old multi-layered forests that covered 12% of the landscape in historic native forests to the artificially high level of 64%. Like the Pacific Northwest plan, complete protection could eventually convert the entire reserve into a self-replacing white fir forest. This is not only unnatural, it is probably unsustainable.

Many species of plants and animals that live in younger forests will decline in numbers while species that live in dense old forests, such as the California spotted owl, will increase to unnaturally high numbers. Regrettably, these artificially dense old forests will no longer represent the beauty and diversity of the historic native forests. This is a tragic and unnecessary loss of our Nation's natural and cultural heritage.

Frequent fires set by Native Americans and lightning used to keep native forests in the Sierra Nevada open, but now they are so thick that any fire has the potential for turning a forest into a colossal furnace. Unlike the original native forests, fires also can spread freely across vast areas because trees have grown to similar sizes, and there are fewer patches of young trees, meadows, and clearings to slow the flames. Creating a huge area of artificial old-growth will dramatically increase the size and severity of future fires.

The mammoth wildfire that scorched nearly half of Yellowstone National Park during the summer of 1988 is a good example of what can be expected in the Sierra Nevada if the Forest Service plan is carried out. This fire was significantly larger than any fire that occurred in Yellowstone in the past 350 years. One reason the fire was so large is that multi-layered older forest covered nearly 65% of the landscape. Historically, such older forests only covered 30% of the landscape. Therefore, what happened in Yellowstone is likely to happen in many other forests that are artificially converted to old-growth.

SUSTAINING REAL OLD-GROWTH FORESTS

All stages of forest development, not just old-growth, were an integral and essential part of America's historic native forests. Historically, each patch in a forest mosaic progressed through an endlessly cycle of renewal, aging, and destruction. This means forest mosaics are constantly changing and only a proportion of all of the patches are in the later stages of development which is old-growth. Furthermore, a patch of old-growth does not stay in the same place within a forest mosaic. Eventually, the patch of old-growth is destroyed while a younger patch of trees somewhere else in the forest mosaic grows into old-growth to replace it. This occurred every 400 years in Pacific Douglas-fir forests and more frequently in many other forests. A similar process must continue in order to sustain both historic native forests and old-growth.

A forest cannot be preserved because it is alive and continually changes. It must be managed. Therefore, the only way to restore and sustain our native forests is through active or hands-on management at a cost that taxpayers are willing to pay. Reintroduction or control of plant and animal species, planting, pre-commercial and

commercial thinning, grazing, prescribed burning, control or suppression of fire, timber harvesting or, where appropriate and effective, temporary or permanent protection should all be available to a manager who is restoring a historic native forest. The nature of the tools and techniques used to restore a forest are unimportant. The only thing that matters is providing this and future generations with an enduring legacy of dynamic and sustainable historic native forests that include all stages of development, including old-growth.

Recently introduced in Congress, The National Historic Forests Act of 2001 (H.R. 2119) provides the means to restore our native forests. The Act authorizes the Secretary of Agriculture to establish and maintain historic forests "that are or, after reasonable restoration, will be representative of prehistoric or historic landscapes significant in the history and culture of the United States." This Act may be the last chance to recover our forgotten forest heritage and avoid the problems of creating artificial and unsustainable forests that fit the popular definition of old-growth.

Senator WYDEN. We thank both our witnesses.

Let me ask some questions of you, Dr. Franklin. You have heard me throughout the afternoon talking about how what this effort is all about coming up with an active management plan, of which old-growth protection is a part, forest health is absolutely key, as is multiple use, and we have said that again and again and that is going to be what our effort is all about.

In terms of trying to clarify some of the terms here, why don't you tell us in your opinion what you think the value of old-growth is as compared to other ages of forests?

Mr. FRANKLIN. Let me just begin by saying I have never ever suggested that only old-growth forests have value. So let me just go on record that I consider all successional stages, all development levels in forests, to have value, and I think I have indicated that in my testimony.

The reason why we have a lot of focus on old, as opposed to early and mid, successional stages is simply because we do not have very much of it left and because there are a number of specialized organisms and a number of processes which are characteristic of those structurally complex forests. So it provides a very special kind of habitat and there are very good reasons for it based on the structural architecture of those stands.

Senator WYDEN. How much old-growth was cut in the Pacific Northwest in the years prior to the Northwest Forest Plan in your view?

Mr. FRANKLIN. Total or Federal?

Senator WYDEN. Both if you have it?

Mr. FRANKLIN. Well, I thought about that earlier today and I do not have the numbers with me, but I would estimate something on the order of two-thirds of the old-growth on Federal lands was cut during the last century, and probably on the order of three-fourths, nine-tenths, a very high proportion, when you figure in the fact that all of the private lands were cut over.

Senator WYDEN. If there is a thinning program in the LSR's, how in your view should it go forward so as to ensure that restoration remains a top priority, as opposed to just going forward with business as usual and some of the practices that left us in this predicament we are in today?

Mr. FRANKLIN. Well, I think there are a lot of guides out there that are available to silviculturalists and managers in terms of how they can approach it. For example, the Forest Service has had an individual by the name of Andy Kerry, Dr. Andy Kerry, in their

Olympia lab that has done an awful lot of work in developing approaches to management that integrate both biodiversity and economic objectives. That work, incidentally, was funded by the U.S. Congress in large measure.

I simply say that as an example of the sort of thing you would be doing would be variable density thinning.

Senator WYDEN. That is what I was going to ask you about. If you would take some time here to tell me how that works—that is an area that we are interested in because it does seem to be picking up a lot of scientific support.

Mr. FRANKLIN. Sure. If you were going out there and you were focusing on timber production, your thinning activity would be generally to think from below, in other words to remove the small and inferior species, in order to release the dominant crop trees in the stand to grow more rapidly, and you would try to create uniformity in your stand. You would want a very evenly distributed stand in order to maximize production.

When you are interested in things like diversity as well as wood production, what you do is you vary within your stand your prescription for thinning. One term that is used for it is “skips and gaps.” In other words, in portions of the area you thin very heavily to provide openings and to allow stimulation of the understory plants; in other areas you do not thin at all, to maintain a very dense patch; and perhaps over half of the area you use an intermediate kind of thinning regime. So you do not do the same thing everywhere.

You also do not just remove the little trees. Sometimes you are removing—you are thinning from above. You are removing dominant trees that release shade-tolerants that are in the understory, hardwood trees, etcetera. So that would be a very central element of any kind of restoration.

Now, that is going to give you a variety of commodities, just like traditional commercial thinning would do, but it is going to give you a very different kind of stand following treatment.

Senator WYDEN. Dr. Bonnicksen, in hopes if maybe getting a little common ground here for a moment, give me your sense of what you think of the thinning approach that Dr. Franklin is talking about, because it is our understanding that variable density thinning has been getting additional support in the scientific community and I am curious whether this is something that you think has some promise, again within the context of an active management plan which I have referred to a number of times in the course of the afternoon.

Dr. BONNICKSEN. Well, you have said in the beginning and reiterated several times that you want to deal with fundamental questions. Honestly, the idea of skip thinning in a second growth douglas fir forest in order to recreate something that you ultimately are having difficulty defining in the first place does not sound like addressing a fundamental question.

The fundamental question is what are you trying to get? And if what you are trying to get is a forest that is dominated by douglas fir and has several age classes of douglas fir and several age classes of western hemlock growing in the understory, yes, there are lots of different ways to get that. But when you are done, what do

you have? You have one big block of forest that fits a predetermined idea of what it is you value, that cannot be sustained. You cannot keep it. It will go away.

I was driving between Eureka and Reading in northern California going by one of these LSR's, late successional reserves, and I was amazed because this late successional reserve had a few scattered douglas fir, very old, very pretty trees in it and the rest of it was just white fir coming up underneath. It was actually—talk about decadent; it was in the final throes of its life. That was a reserve that would not be, I do not think, resurrected ever again as a douglas fir forest. It will just turn into a white fir forest.

So yes, you can thin, you can create those structural attributes that you associate with old-growth, and you can use a variety of ways to achieve it, and whatever the silviculturalists can agree to do is fine with me.

Senator WYDEN. Let us ask Dr. Franklin how he would respond to the comment of Dr. Bonnicksen. Dr. Franklin, do you think that what Dr. Bonnicksen has described as your thinning program is not going to get you much?

Mr. FRANKLIN. How is that again?

Senator WYDEN. I mean, I think what Dr. Bonnicksen said when I asked him about variable thinning and the approach that you talked about, he said, what have you got? He described something that he thought was not going to meet anybody's definition of a good management plan. I just would like your reaction the what he just said.

Mr. FRANKLIN. I obviously disagree with him. We have absolute fundamental disagreement and I would suggest that Dr. Bonnicksen is outside of the scientific consensus on this issue.

Senator WYDEN. Okay, that is what I wanted. That is the back and forth I wanted. Look, reasonable people can differ and that is the point of hearings in the U.S. Senate.

Dr. BONNICKSEN. I am not going to respond to a personal attack like that because I am very well aware of what my role is in the scientific community, and I do not depend on Dr. Franklin to define that for me.

But let me say, this other point that was brought up earlier about all the scientific values and ecological values of old-growth that all the studies have demonstrated. I suggest to you as a scientist that if you were to pour the millions of dollars into research on the other successional stages that are an integral part of a dynamic, functioning forest, you would find that each and every one of them had immeasurable scientific value rivaling anything anybody has found from old-growth.

So just because that is where the money went does not mean that is what is really important scientifically or even ecologically.

Senator WYDEN. Dr. Bonnicksen, again I want it understood I am not going to be attacking anybody—

Dr. BONNICKSEN. I am not suggesting you were.

Senator WYDEN [continuing]. In the course of this debate. The reason Senator Craig and I have made headway working with Senator Smith is because we are trying to find some common ground, and that is what I am going to continue to do. My door is open to both of you and I am anxious to do that.

Let me just ask a couple other questions. I just wanted to repeat that for what it is worth here.

Dr. Franklin, with respect to a forest that has been harvested and hand-planted, can that develop into an old-growth forest with time?

Mr. FRANKLIN. A forest that has been cut and hand-planted, sure. Fundamentally, if you accept the premise that mature and old forests are characterized by particular kinds of structural conditions, and assuming that the planting stock is from an appropriate seed source so it has the potential to realize the growth opportunity on that site, sure.

What we are dealing with is not questions of whether those stands are going to arrive at a structurally complex condition at some point. Our goal is to speed that process, because we are short on that kind of habitat, in some cases because we want to reestablish the integrity of the late successional reserves.

So yes.

Senator WYDEN. I assume that that time could be shortened if you had good forest management activities—thinnings, individual tree or group selection harvests as well?

Mr. FRANKLIN. Yes. I have estimated the kinds of things that are being laid out, that I laid out and others have laid out for thinning in LSR's, could speed the development of some of these structural attributes by 3 to 5 decades.

Senator WYDEN. A question for both of you. If Congress or an administration drew a line on a map and said you could preserve a forest in a specific ecological stage, such as old-growth or saplings and poles, what would be your reaction?

Mr. FRANKLIN. Where is it? What type is it?

Senator WYDEN. Dr. Bonnicksen.

Dr. BONNICKSEN. No, you cannot. Congress can pass laws, but it cannot violate scientific laws. There are forests that you could pretty much leave alone. I have given you one, high mountain balsam fir, a very rare forest, a very valuable forest from the point of view that it has not changed since the end of the Ice Age actually. Beech maple forest, maple basswood forest, you could probably draw a line around those two, if you allowed people to go in and shoot deer to make sure that they could regenerate, because those are wind forests.

But no, you cannot preserve a forest by drawing a line around it. It is not possible.

Senator WYDEN. Gentlemen, I do not have any further questions. If you all would like to add anything further, we are happy to have it. But just understand that the doors of this subcommittee are wide open to both of you. The goal here is to get beyond some of what has divided people on this issue, to show that you can have a management plan, an integrated management plan, where you can manage these forests for all Americans. We are going to stay at it until we figure out a way to do it, and we need your input and counsel.

Anything either of you would like to add?

Dr. Bonnicksen.

Dr. BONNICKSEN. Yes, Mr. Chairman. I would strongly suggest that you contact Congressman Mike Simpson from Idaho and dis-

cuss with him H.R. 2119, the National Historic Forests Act that he introduced, because I think you will find in that Act many of the answers to your questions and many of the solutions to your problem. I would really suggest that.

Senator WYDEN. Well, I think your point is a good one and I do know Mike and he is a good man. As you know, that legislation has generated a fair amount of opposition. What Senator Craig and I did at the outset on the county payments bill, which really is a historic step towards trying to get some balance in natural resources, is we said, what we are going to try to do out of the box is to find some ways to bring people together, because what has made this issue so contentious in the past is one bill after another has been introduced and the people who support it are out and vociferous and the people who are against it are equally vociferous, and then the discussion ends.

Incredibly, the county payments bill that Senator Craig and I wrote in the last session was the first piece of forestry legislation to come to the floor in the U.S. Senate in almost 2 decades, only because we said we were going to try to do it differently.

So you are absolutely right, Mike Simpson is a good man and I am definitely going to look at his bill and everybody else's bill in an effort to try to move this along. What I am just going to ask everybody else to do is to see if we can maybe lower this decibel level a little bit and find a way to get people to focus on the areas we agree on and then we will roll up our sleeves and deal with the issues that we do not agree on.

That is why I asked as I did on the definition of old-growth. If we can do nothing else except cut through those tomes and find some areas that constitute some common ground, we begin to kind of narrow the choices in front of us.

Dr. BONNICKSEN. Mr. Chairman, can I just say one thing? I am already at the old-growth stage myself and becoming somewhat impatient about a lot of things, one of which is my love of forests and my sincere concern for sustaining them. It is sad for me to hear you say that the historic forests that graced North America and bringing back many of those forests is contentious. To me it is our heritage and I am deeply saddened that anyone would not want to see them back.

Senator WYDEN. Well, I guess if you are concluding after a couple hours of this hearing I am not interested in protecting—

Dr. BONNICKSEN. No, no. I am thinking about the contention you said was associated with H.R. 2119.

Senator WYDEN. Well, I think that is a matter of public record, sir, that there have been a number of groups that have come out against it. I think that what Senator Craig and I showed is that we were going to take the time before we sent everybody off into their armed camps to fight, we were going to take some time to try to show the areas where people would agree.

That is what we are going to do here again. As I did with your comments, I am sure not interested in attacking you. Your sincerity is very evident. I know Mike Simpson; he is a good man. I think what we are trying to do is show that there is a different way of going about doing it, and I would like you and Dr. Franklin to walk out of here knowing that our doors are open to you and we are

going to look for creative ideas that bring people together and do it fast.

I think you are right, we are all sort of old-growth and we have got to do this fast. So give us your counsel and ideas and we want to work with you.

We have got a vote on the floor of the Senate, so I am going to have to go make that. If our third panel can just be a little bit patient, I will hustle over and make the vote, and I will be back. If they can come forward, that will save us some time.

[Recess from 4:42 p.m. to 5:13 p.m.]

Senator WYDEN. The subcommittee will come to order. Apologies to all the witnesses. It is just awfully hectic here.

We are going to make your prepared remarks part of the hearing record in their entirety. If you all could summarize your principal concerns, that would be helpful. I hope all our witnesses have gotten the drift that we are really looking for ways to find some common ground here. We look forward to your ideas and thoughts on how to do it.

Mr. Palola, welcome.

**STATEMENT OF ERIC S. PALOLA, DIRECTOR, NORTHEAST
REGIONAL OFFICE, NATIONAL WILDLIFE FEDERATION**

Mr. PALOLA. Yes, good afternoon. My name is Eric Palola. I am a natural resource economist and Director of the National Wildlife Federation's Northeast Regional Office. I come originally from a timber family in Washington State. However, I have lived in Vermont for the last 30 years. In addition to my work with the Federation, I will soon encounter, like many of my rural neighbors, decisions about how to balance private income with old-growth forest characteristics, as a recently minted private forest land owner.

I would like to thank you for inviting me and in particular for adding an eastern forest perspective to this panel this afternoon. I will similarly highlight the written testimony which I have submitted.

There is little doubt, as you have heard from the previous speakers today, as to the value of old-growth forests. If we agree, however, that old-growth forests, however they may be defined regionally, are valuable to society, then the key questions from where I sit are, namely, what conditions are necessary to maintaining or restoring old-growth forests, how much do we need, and how much can we reasonably get, and how should we spread the costs of old-growth conservation and restoration.

What conditions are necessary? Any discussion of old-growth conservation outside of public lands, at least in the East, needs to acknowledge a couple of first order barriers and threats to forest tenure and good forest management. Simply put, we cannot get to old-growth conditions if the economics of forest ownership do not encourage and reward long-term sustainable forestry.

We place practically no market value, for example, on forests that provide exceptional ecological services or habitats, such as old-growth, unless they happen to serve public drinking water or tourism types of values. So it is very hard for private forest owners to differentiate the value of forest land for anything but the value of the wood that is on it, and consequently we see the average parcel

sizes declining across the Northeast and also turning over more rapidly, on the average of about every 8 to 9 years in our region of the country.

Similar to economic uncertainties, old-growth values will be quickly discounted if large-scale ecological disruptions, such as climate change, induced stand replacement events, or persistent effects of acid rain and mercury deposition, continue to take their toll on our forest systems, as they have for too many years already.

The clearest example of this is mercury deposition, where we have observed that rain falling over New England is frequently three to four times above the safe EPA wildlife standard for mercury. In addition, some researchers have found that trees in areas of the Northeast have essentially stopped growing due to suspected stress from cumulative air pollution.

I can tell you in my own town the Christmas tree growers and maple syrup producers are wondering whether Congress will act to clean the rain of mercury and acid rain. So with due respect to the more specific topic of old-growth, I would be negligent if I did not at least comment about the prospects for eastern old-growth without commenting on these basic threats to forest security.

How much do we need, how much old-growth? We need more forests with more old-growth qualities. True old-growth conditions in the East are scarce and, with the exception of the Adirondack Park in New York and a few other tracts, are relatively small and widely distributed. While many of these remnant stands are protected, we should not, as a matter of policy, direct all our efforts to simply trying to enlarge them. There are no more remnant stands to buy.

Eastern forests were the first ones, as the writer Bill McGibbon put it, to “hit bottom” across our country. This means that we have to recruit the conditions, both economic and cultural, which favor putting old-growth qualities back into our ecosystems over time.

A key impediment in our region is the forest composition. The lack of old-growth is a symptom of an overall loss of biodiversity. So as much as we might argue for more older trees, of equal concern is the case of the missing, those trees that evolved in our region and which made up a significant percentage of our historic forests, but are essentially gone at the forest end level. Examples include chestnut, elm, more recently butternut. Vermont, interestingly, used to be the lumber capital, lumber export capital of the world. We were valued for our tight-grained red spruce.

Who and how will we pay? As I mentioned earlier, we know that we if we improve the economics of sustainable forest management, then we improve the likelihood that more of our forests will grow to maturity. If we can provide incentives to grow forests to their economic maturity—and I am talking about select-grade saw logs and veneer logs, not pulp plantations—then we improve the likelihood that some percentage of trees in these forests will be allowed the grow to ecological maturity, or old-growth.

This is admittedly a second order approach, but we need to take things in order. Forest longevity follows on forest security and forest diversity.

In my own case, I have a number of individual examples of what my forester calls legacy trees or historical markers, and they are

by no means representative of old-growth conditions, but they serve as a proxy for some.

Who will pay to wait while our relatively young eastern forests grow up? Some properties may deserve public protection through direct purchase, but in these cases old-growth will likely need to be part of a larger package of values that include recreation, remoteness or drinking water protection. For the majority of forest lands in the East, however, the success of old-growth recruitment will depend on the economic signals.

We have enjoyed exceptional leadership from the New England delegation on forest matters, especially on the Senate side and especially from my two Vermont Senators. We are grateful for that. The Congress has made some good starts in the last 10 years, for example by creating a forestry title in the farm bill and by creating Federal cost-share programs, such as the forestry incentive, the forest legacy programs. These programs are up for reauthorization and the National Wildlife Federation urges you to support them as fully as these tightening budget times allow.

Other more experimental programs will help, such as payments for carbon offsets, which the chairman has, I know, given a lot of thought to; other ideas, community forestry bonds, Federal tax incentives for conservation. I have appended a list of some of these policy ideas to my testimony.

To conclude, I would like to reinforce just one theme, especially as your full committee considers the Nation's energy situation. The National Wildlife Federation is extremely worried about an energy policy that emphasizes oil and coal development while relaxing air pollution regulations. Eastern forests and their inhabitants are experiencing a slow but certain cancer from airborne pollutants.

I was frankly initially tempted to devote all my testimony to this problem, it is that serious. It is difficult, frankly, for those of us who live in these forests to compartmentalize issues of forest health. So I would like to conclude with that.

Thank you again very much for inviting me and for your time.
[The prepared statement of Mr. Palola follows:]

PREPARED STATEMENT OF ERIC S. PALOLA, DIRECTOR, NORTHEAST REGIONAL OFFICE,
NATIONAL WILDLIFE FEDERATION

Chairman Wyden and members of the subcommittee:

My name is Eric Palola and I am a natural resource economist and Director of the National Wildlife Federation's northeast regional office. I come originally from a timber family in Washington state, however I have lived in Vermont for the past thirty years. In addition to my work with the Federation, I will soon encounter, like many of my rural neighbors, decisions about how to balance private income with old growth forest characteristics as a recently-minted private forest land owner. The National Wildlife Federation has been deeply involved in forestry issues in the northeast over the last decade starting with the work of the Congressionally authorized Northern Forest Lands Council. More recently, my office has been involved in a variety of community and private forestry endeavors including the independent verification of sustainable forestry on roughly 1.5 million acres across six states under the internationally recognized Forest Stewardship Council system; as one of a dozen special projects under a national community forestry demonstration program sponsored by the Ford Foundation, and as a member of two state-level commissions involved in assessing forest conditions and economic opportunities within the wood products sector.

There is little doubt, as you've heard from the previous speakers today, as to the value of old growth forests. They enrich our biodiversity and provide core wildlife habitat for wildlife; they serve as genetic repositories while yielding non-timber

products such as medicinals or herbs. And for many, old growth forests provide unparalleled spiritual, aesthetic, and recreational values.

If we agree that old-growth forests—however they are defined regionally—are valuable to society then the key questions from a policy standpoint are: What conditions are necessary to maintaining or restoring old-growth forests? How much old growth do we need and how much can we reasonably get? And, how should we spread the costs of old-growth conservation and restoration? To answer these questions the National Wildlife Federation starts with the following perspectives:

1. Old growth comprises a set of forest conditions that should not be limited to descriptions of the age class of trees alone. For example in the northeast, mature hardwood trees of 80-120 years of age can satisfy some of the values that are ascribed to 200-300 year old forests, such as for certain understory plants, although these trees are still vigorously growing.

2. The nation as a whole, and the east in particular where I live, lacks a sufficient component of forests containing old-growth characteristics. In general, while the landscape is returning to forest cover from two centuries of agriculture, the profile of our forests tend to be younger and more simplified than ever before. Our challenge is to provide incentives that encourage the recruitment of more biological diversity of which a higher percentage of old growth is a key indicator.

3. The restoration of adequate levels of old growth will require a variety of tools. We should not rely, for example, on public land acquisition as the only, or necessarily best approach. Several existing federal cost-share programs, as well as some unexplored or untested tax policy mechanisms, can serve to set the stage for old growth recruitment in the future

4. While publicly-held old growth reserves are the most secure option, many “working forest landscapes”—especially those in the so-called non-industrial forest landowner (NIPF) base can practice and showcase long-term sustainable forest management that includes, by definition, some recruitment of future old-growth.

The National Wildlife Federation is focused on encouraging conservation on working landscapes across the country whether they are managed for crops, livestock, or timber.¹ We value working landscapes not only because this is where the bulk of America’s natural resources are located and hence some of the best opportunities for conservation, but because we value the social fabric, the local knowledge, and the contributions that natural resource dependent communities make to our sense of who we are as a nation. The question of old-growth conservation is deeply embedded in our attitudes, customs, and uses of the forest. To draw just one example, I can fairly say that most people in the east don’t know what an eastern old-growth forest looks like they’ve been reduced to less than one-half of one percent of the forest land base—whereas many of us have been able to stand within the remaining ancient forests of Redwood National Park, or on the Olympic Peninsula, and have a genuine feel for what a really old forest looks and smells and sounds like. We have to appreciate these cultural differences as we think about old growth in the future.

To respond to my initial policy questions:

1. What conditions are necessary?

Any discussion of old growth conservation outside of public lands needs to acknowledge the “first-order” barriers and threats to forest tenure and good forest management. Simply put, we can not get to old growth conditions if the economics of forest ownership do not encourage and reward long term sustainable forestry. Right now, we send very inconsistent economic and policy messages about the value and importance of timber land as a long term investment, and we place practically no market value on forests that provide exceptional ecological services or habitat such as old-growth, (unless they happen to serve perhaps public drinking water supplies or tourism.) Thus its very hard for private forest owners to differentiate the value of forest land for anything but the value of the wood that’s on it, or some other non-forest alternative, such as real estate development. Consequently we see average parcel sizes declining and turning over more rapidly Standing old-growth certainly doesn’t pay, but nor do many typical private forests.

Similar to economic uncertainties, old growth will be quickly discounted if large-scale ecological disruptions, such as climate change-induced stand replacing events or if the persistent effects of acid rain and mercury deposition continue to take their toll on our forest systems—as they have for too many years already. Only in the last ten years, have scientists been able to begin to draw firm causal links between air pollution and the health of wildlife and forests. The clearest example is mercury deposition where we’ve observed that rain falling over New England is frequently

¹*Working Landscapes: Cultivating Conservation in the 2002 Farm Bill.* National Wildlife Federation, 2001

3-4 times above the safe EPA wildlife standard for mercury.² In addition, researchers have found that trees in some areas of the northeast have simply stopped growing due to the suspected stress from cumulative air pollution.³ Red spruce, once the prized lumber export of our region, now has difficulty regenerating and is dying at high elevations. I can tell you that Christmas tree growers and maple syrup producers in my town are wondering whether Congress will act to “clean the rain” of mercury and acid rain. So, with due respect to the more specific topic of old growth, I would be negligent for me to talk about the prospects for eastern old-growth without commenting on these basic threats to forest security in the northeast.

2. How much do we need?

We need more forests with more old growth qualities. This means not just a higher component of older trees, but forests which are representative of the range of old growth attributes: multiple growth layers, large fallen logs, plentiful snag and cavity-nesting trees, abundance of lichens and fungi, an undulating forest floor resulting from decomposition and undisturbed soils, and well shaded streams. True old growth conditions in the east are scarce and, with the exception of the Adirondack Park and a few other tracts, are relatively small and widely distributed. While many of these remnants stands are protected, we should not as matter of policy direct all our efforts to simply trying to enlarge them. There are no more remnant stands to buy. Eastern forests were the first ones, as the writer Bill McKibben has put it, “to hit bottom” across our country. This means that we have to recruit the conditions both economic and cultural—which favor putting old growth qualities back into our ecosystems over time.

A key impediment in our region relates to forest composition. The lack of old growth is but a symptom of an overall loss of biodiversity that stems primarily from past heavy cutting practices and the problem of invasive pests and diseases. The loss of old red spruce was one casualty. As much as we might argue for more older trees, of equal concern is the case of the missing: those trees that evolved in our region, and which made up a significant percentage of our historic forests, but which are essentially gone at the forest stand level. Examples include chestnut, elm, or more recently butternut. This loss of biodiversity means that a whole host of other relationships between plants, birds, mushrooms, and understory plants that were in the forests of our forefathers are now missing or compromised.⁴ Thus, if we want more old growth for biodiversity or for carbon sequestration reasons, then policies which encourage restoration of the full array of forest attributes and species including large predators such as mountain lions and wolves—may be just as important as recruiting older trees from within a given stand.

3. Who, and how, will we pay? . . .

We can afford to put more old growth characteristics back in our forests by being smart about how we spread the costs and incentives of restoration. As I mentioned earlier, we know that if we improve the economics of sustainable forest management, then we improve the likelihood that more of our forests will grow to maturity. If we can provide incentives to grow forests to their economic maturity—and I’m talking about select grade sawlogs and veneer logs, not pulp plantations—then we improve the likelihood that some percentage of trees in these forests will be allowed to grow to ecological maturity, or old growth. This is admittedly a “second best” approach, but we need to take things in order: forest longevity follows on forest security and forest diversity. In my own case, I have a number of individual examples of what my forester calls “legacy trees” or “historical markers.” They are by no means representative of old growth conditions but they serve as a proxy for some. Fortunately, I think the mainstream forestry community has a much deeper appreciation of the role of old growth than ever before. I think many forest managers would opt to see more older trees in the woods, rather than rely solely on public “tree museums”, if some of the economic constraints were removed.

But who will “pay to wait” while our relatively young eastern forests grow up? Some properties which have outstanding old-growth qualities may deserve public protection through direct purchase, but in these cases old-growth will likely need to part of a larger package of values that include recreation, remoteness, or drinking water protection. For the majority of forest lands in the east, however, the success of old growth recruitment will depend on the economic and policy signals. Many of my friends in the policy community have given a lot of thought to these issues.

² *Clean the Rain—New England report*. National Wildlife Federation, September 2000.

³ *The Toll from Coal: How Emissions from the Nation’s Coal-Fired Power Plants Devastate Wildlife and Threaten Human Health*, National Wildlife Federation, 2000

⁴ For an excellent reference on ecological issues associated with old growth maintenance and recovery see: *Eastern Old Growth Forests: Prospects for Rediscovery and Recovery*, M.B. Davis, Editor, Island Press, 1996.

We've enjoyed exceptional leadership from the New England delegation on forestry matters—especially on the Senate side—and especially from my two Vermont Senators. We're grateful for that. The Congress has made some good starts in the last ten years, for example, by creating a forestry title in the Farm Bill, and by creating federal cost-share programs such as the Forestry Incentive Program and the Forest Legacy Program. These programs are up for re-authorization and the National Wildlife Federation urges you to support them as fully as these tightening budget times allow. Other, more experimental programs will help, such as payments for carbon offsets, community forestry bonds, and federal tax incentives for conservation. Let try some of them. Any effort that hitches affordability to conservation will help in the ultimate decision of whether forests get to remain as forests, and then perhaps the option of old growth. Along these lines, I want to note that I've appended a short list of recommended policies with my testimony.

To conclude I'd like to reinforce just one theme, especially as your full committee considers the nation's energy situation. The National Wildlife Federation is extremely worried about an energy policy that emphasizes oil and coal development while relaxing air pollution regulations. Eastern forests and their inhabitants are experiencing a slow but certain cancer from airborne pollutants. I was initially tempted to devote all of my testimony to this problem—its that serious—and its difficult, frankly, for those of who live in forests to compartmentalize issues of forest health.

Thank you for your time this afternoon.

Senator WYDEN. Thank you very much, Mr. Palola.

Mr. Johnston, thank you, from Eugene, Oregon.

**STATEMENT OF JAMES JOHNSTON, CO-DIRECTOR,
CASCADIA WILDLANDS PROJECT, EUGENE, OR**

Mr. JOHNSTON. Yes, Mr. Chairman. Thank you very much for asking me to appear today. My name is James Johnston. I am the co-director of the Cascadia Wildlife Project and I also coordinate Federal forest issues for the Oregon chapter of the Sierra Club, and I am going to be directing my comments specifically to the old-growth forests of the west side, western Oregon and Washington.

I grew up in a small logging town in the Oregon Coast Range and I have been working on old-growth issues for about 10 years now, so I have had a front row seat for the debate over old-growth logging and the management of Federal forests in western Oregon and Washington.

I could easily talk to you about old-growth and Federal forest management for days, but if I had to distill my perspective into one sentence I would say that a sound management plan for Federal forests must be legally defensible, based on sound science, and supported by the public. Now, we have taken important steps in that direction with the Northwest Forest Plan and ecosystem management strategy. But the plan has a serious flaw. It still allows the Forest Service and the BLM to log old-growth and there is not much old-growth left.

Now, Mr. Chairman, you have many years of experience with the debate over management of national forests in Oregon and you have undoubtedly grown accustomed to hyperbole, so I do not need to tell you that the old-growth forests of Oregon are the best forests in the world. Unfortunately, only about 10 percent of these, these ancient forests, remain. Most of them are on public lands, and most Americans would be shocked to learn that the Forest Service and BLM still spend taxpayer dollars to log them. Right now, some of the best old-growth left in the Pacific Northwest is on the chopping block, including trees more than 8 feet in diameter and 500 years old.

Under the Northwest Forest Plan, we will be logging 1.1 million acres of late successional forests, about half of which are these classic ancient forests or cathedral forests. This type of logging is dramatically out of step with societal values. We do not need to harpoon whales for lantern oil or shoot elephants to make piano keys. Similarly, we do not need to log trees that are hundreds of years old to produce wood products or to maintain quality jobs in the wood products industry.

Today, only 3 of the 71 saw mills in western Oregon depend on Federal timber to any significant extent. Federal logging accounts for less than 8 percent of total wood production, down from 34 percent during the height of the Federal logging boom in the 1980's, and the wood products industry represents less than 2 percent of total employment in Oregon and Washington.

Now, I am not suggesting that timber is not an important industry and I am not suggesting that we should stop practicing forest on public lands. In fact, I believe that there should be an increased role for forestry. But we cannot get Federal forests back to work unless the Forest Service and BLM get out of the old-growth business.

It hardly needs to be said that ancient forest logging is extremely unpopular government policy. As Teddy Roosevelt noted, Americans like big things. You will find overwhelming support among your constituents for ending old-growth logging.

Now, there are alternatives to old-growth logging. The Forest Service and BLM could stop clearcutting older forests and implement a restoration silviculture program in young managed stands, in tree farms. This alternative has been discussed by previous witnesses.

I do not want the committee to get the impression that thinning is a panacea for ending old-growth logging. It is an alternative and something that is worthwhile being explored. We do not want to turn thinning into another political hot potato similar to what old-growth logging is. We want to proceed carefully and let science chart a direction for us, not just set another timber target that we are not going to be able to meet.

But there is definitely room for discussion of thinning opportunities. In fact, we believe that the problem with management of public lands currently is the forests are not being managed. Agencies are devoting scarce resources to clearcutting older stands and meeting the legal requirements for this type of logging, including surveys for rare species. At the same time, there are hundreds of thousands of acres that could be restored, hundreds of thousands of acres of tree farms that could be restored. In our region, the Forest Service and BLM are only meeting about 10 percent of that need.

Now, as I said, I could talk about management of Federal forests for days. Mostly, I would be telling you what is wrong with the Forest Service and BLM. But I will conclude by telling you about something that is right. I strongly urge the committee to acquaint themselves with the work that is being done in Oregon's Siuslaw National Forest. I spent several days there last week with other conservationists, agency staff, scientists, representatives from com-

munity economic development organizations, the timber industry, labor unions, county commissioners, watershed councils.

To our surprise, we actually all got along pretty well. Mostly we agreed that there is a lot of opportunities for work on this forest. The Siuslaw, unlike other forests, emphasizes watershed restoration, with a variety of projects, from placement of in-stream habitat structures to thinning of overstock plantations.

Although production of wood fiber is largely an incidental by-product of restoration efforts, the Siuslaw produces around 25 million board-feet of timber annually, and this is considerably more timber per acre than the forests you assume are going to produce a lot of wood volume, the workhorses like the Willamette and Gifford Pinchot National Forest.

The Siuslaw could be doing a lot more. They could be thinning 5,000 acres of overstock tree plantations. They are only budgeted to manage about 3,000. Funding work like that which is being done on the Siuslaw National Forest is not welfare for watersheds. It is an investment in our future that will pay huge dividends down the road when we have clean water, healthy salmon runs, healthy communities, healthy forests, a world-class tourist destination.

For years, we subsidized clearcutting of old-growth forests because that type of logging built roads and schools and provided a way of life for the residents of our region. Today, logging does not drive our economy. The new economy depends on the non-timber amenities provided by public lands. Times have changed a lot in our region and government priorities need to change, too. Ending old-growth logging and investing in our forests is an idea whose time has come.

Thanks.

[The prepared statement of Mr. Johnston follows:]

PREPARED STATEMENT OF JAMES JOHNSTON, CO-DIRECTOR, CASCADIA WILDLANDS
PROJECT, EUGENE, OR

Mr. Chairman, members of the committee, thank you for the opportunity to appear today. My name is James Johnston; I am the director of the Cascadia Wildlands Project, a non-profit conservation organization based in Eugene, Oregon. I also coordinate federal forest issues for the Oregon Chapter of the Sierra Club. And I am also here today representing a new coalition of regional conservation groups that's working to protect remaining late-successional and old growth forests in western Oregon and Washington.

I grew up in the Oregon Coast Range, next to a small logging town. I have had a front row seat for the intense debate over old growth logging and the management of federal forests in the Pacific Northwest. I could talk easily talk about old growth and federal forest management for days. But if I had to distill my perspective into one sentence I'd say that a sound management plan for federal forests must be legally defensible, based on sound science and supported by the public.

We've taken important steps towards achieving those goals. Today the federal forests of western Oregon, Washington and northern California are managed under the Northwest Forest Plan, one of the first true ecosystem management strategies. But the Plan has a serious flaw: It still allows the Forest Service and Bureau of Land Management to log old growth, and there's not much old growth left.

In my testimony today I want to give the committee:

1. Background on old growth logging under the Northwest Forest Plan.
2. Some information about changes to the economy and workforce of the Pacific Northwest that suggests the need to develop alternatives to logging older forests.
3. A review of the progress of the Northwest Forest Plan in meeting agencies' legal mandates, the public's expectations and timber production goals.
4. A brief sketch of an alternative management strategy.

ANCIENT FOREST LOGGING

Mr. Chairman, you have many years' experience with the controversy over management of public lands in the Pacific Northwest. By now you have undoubtedly grown accustomed to hyperbole. Conservationists have overused words like "unique," "magnificent" and "critical" to describe the forests of our region, particularly when they are threatened with destruction. Nevertheless, the ancient forests found in western Oregon, Washington and northern California are a truly exceptional natural heritage. They contain more biomass per acre than any other terrestrial ecosystem, and are home to some of the world's largest and oldest living things.

Many observers have used the term "cathedral forest" to describe stands of Douglas fir, western red cedar and Sitka spruce that tower more than 300 feet above the ground. Unlike a tree farm, the cathedral forest is a structurally complex ecosystem, characterized by a multi-storied canopy, copious snags and downed logs. This complexity results in rich biodiversity; there are thousands of species of plant and animal life associated with this forest type, with more discovered every day. Like a cathedral, these forests have been a source of inspiration for millions of visitors, and a source of pride for those of us who live in the Pacific Northwest.

In addition to their aesthetic appeal, westside ancient forests also provide important services. Their complex structure acts as a natural filter, providing extremely pure water to municipalities. The clean cold water produced by ancient forests is also critical to the persistence of salmon runs, which in turn support an industry that employs as much as 60,000 workers. Ancient forests are giant carbon sinks that mitigate global climate change. They provide unique recreation experiences that pump millions of dollars into local communities. As we learned from our experience with the Pacific yew, the biological richness of ancient forests also has enormous potential for scientific research that yields new medical treatments and a variety of commercial applications.

After decades of intensive logging, only about 10% of these westside ancient forests remain. Almost all of what's left is found on the National Forests and Bureau of Land Management Districts managed under the direction of the Northwest Forest Plan. These lands are owned by all of us, and most Americans would be shocked to learn that the Forest Service and BLM still spend taxpayer dollars to log ancient forests. Timber sales in western Oregon and Washington like the Goose Egg, Solo, Clark, North Winberry, Snog, Peanuts, Fish Creek, Warm Springs and Mr. Wilson sales, and many others, would log trees up to 9 feet in diameter, more than 300 feet tall and more than 500 years old. The Forest Service and BLM are currently logging, or plan to log some of the biggest and oldest trees left in the country. Under the Northwest Forest Plan, the Forest Service and BLM will log more than 1.1 million acres of late-successional forests, almost half of which are the classic cathedral forests that I described a moment ago.

This type of logging is dramatically out of step with societal values. We don't need to harpoon whales for lantern oil, or shoot elephants to make piano keys. Similarly, our country doesn't need to log trees that are hundreds of years old to produce wood products, or to maintain quality jobs in the woods products industry.

JOBS AND THE REGIONAL ECONOMY

Unfortunately, conservationists' proposals to protect older forests are commonly painted by timber interests as costing workers their jobs and undermining the stability of rural communities. When court injunctions and the last administration's Northwest Forest Plan reduced logging levels from their historic highs in the late 1980s, industry lobbyists warned that our region would suffer an economic catastrophe and the loss of thousands, if not hundreds of thousands of jobs. Economist Ernie Niemi and colleagues addressed the Pacific Northwest's response to federal logging reductions in a recent report entitled "The Sky Did Not Fall." They point out that our regions' economic life had already begun to change long before implementation of new forest protections. Today, our economy has transformed itself to the point where we are ready to adopt alternatives to old growth logging. Consider the following facts:

- Due in large part to automation and exportation of both raw logs and production capacity, the wood products industry had already lost thousands of jobs while logging levels on federal lands increased. During the period of heaviest logging on federal lands in the Pacific Northwest, from 1979 to 1989, timber employment declined by more than 27,000 jobs. The wages paid to remaining workers in the wood products industry fell by 18%.

- Despite industry fears, the Pacific Northwest prospered when federal logging levels were reduced in the early 1990s. Total employment in our region increased 27 percent, with more than 825,000 new jobs created.
- When the Northwest Forest Plan was adopted in 1994, it was assumed that the timber industry needed to log older forests to survive. This assumption is clearly no longer valid. Today, only 3 of the 71 sawmills in western Oregon depend on federal timber to any significant extent, and 40 process no federal timber whatsoever. Three-quarters of western Washington's sawmills process no federal timber, and only one mill depends on federal timber for more than one-third of its log supply.
- During the federal forest logging boom in western Washington and Oregon in the mid 1980s, federal logging accounted for 34% percent of total timber production. By 1996, federal logging in western Oregon and Washington was 7.5 percent of total timber production, and continues to decline.
- Today, the wood products industry represents less than 2% of total employment in Oregon and Washington. A minute percentage of these jobs depend on logging older forests on westside federal forests.

At the same time as the Pacific Northwest's economy has become less dependent on federal forest logging, the value of unlogged forests has increased. A full description of this trend would be take some time, but consider the following brief examples:

- Studies suggest that the services associated with pristine forests in our region things like camping, hunting, fishing and hiking opportunities account for 90% of the total value of all commodities derived from these lands. Timber production accounts for only 10% of this total.
- Whereas in the past our region's economy depended on extracting natural resources, today it depends on attracting new businesses and a skilled and productive workforce. Research indicates that people live and work in western Oregon and Washington because they receive a second paycheck in the form of recreation opportunities, clean water and scenic beauty. Every old growth timber sale logged represents a pay cut for the thousands of people who live in our region for the natural amenities.
- Taxpayers and businesses incur substantial costs to offset the effects of environmental degradation from logging older forests, such as impacts to salmon runs, cost to repair damaged filtration plants, loss of tourist business and loss of funding for needed social services and economic development projects.

I'm not suggesting that timber isn't an important industry, and I'm not suggesting that we stop practicing forestry on public lands. In fact, I believe that there should be an increased role for forestry on hundreds of thousands of acres of planted young managed stands. Before I conclude my testimony with a discussion of these opportunities, let me describe the current status of the Northwest Forest Plan.

STATE OF THE NORTHWEST FOREST PLAN

Land management agencies have been trying to create an old growth logging program that is legally defensible and reflects the public's values for almost 15 years, and they have failed. It is highly unlikely that they will ever succeed.

The Forest Plan has failed to produce wood volume while meeting federal agencies' legal mandates. Two recent lawsuits—*Oregon Natural Resources Council Action v. the U.S. Forest Service and Pacific Federation of Fisherman's Associations II v. National Marine Fisheries Service*—have enjoined most federal timber sales during the past two years. At present, most federal forests in western Oregon and Washington are producing less than 10% of the timber volume projected by the Plan. These legal actions are the direct result of the agencies' decision to concentrate logging in older forest stands, which are critical to the persistence of a variety of threatened wildlife species and important ecological processes.

It hardly needs to be said that ancient forest logging is an extremely unpopular government policy. As Teddy Roosevelt once noted, "Americans like big things." We have a visceral reaction to the destruction of a unique natural legacy. A public opinion survey conducted in April by a respected, non-partisan polling firm in Portland found that that 75% of Oregon and Washington residents support ending old growth logging. This support cuts across demographic and party lines, and is strong in rural, urban and resource-dependent communities.

At the same time we are learning more and more about the importance of older forests. Seven of the leading old growth researchers in the country recently petitioned the Forest Service and BLM to protect all remaining late-successional and old growth forests in our region. They point to new scientific research that strength-

ens the view that each old forest is to some degree unique, and therefore of critical importance.

Although logging ancient forest is clearly bad for the environment, there are other types of logging that conservationists can support. Thinning young, single-age, single-species plantations can benefit the forest in western Oregon and Washington. Many of these westside tree farms are overstocked and characterized by uniform stand structure and low species diversity. Federal agencies, distracted by their outdated old growth logging agenda, are currently neglecting opportunities to practice forestry in these plantations.

Protecting forests against fire, disease and pest infestation is another important consideration. Ancient forests, with their high canopies, thick, fire resistant bark and wide spacing, are naturally resistant to these disturbances. Fires in ancient forests tend to be low intensity burns. Overstocked small diameter tree farms have a single-layer canopy and are at the greatest risk of a catastrophic fire. The Forest Service and BLM set the stage for wildfire by converting fire resistant ancient forests into fire prone tree farms. This must stop.

During the past five years there have been approximately 350,000 acres of tree plantations available annually in the national forests of western Oregon and Washington in need of active management. During that period, the Forest Service has only treated about 50,000 acres. The Bureau of Land Management has about 210,000 acres of young tree farms from 0-30 years of age in late-successional reserves that could potentially benefit from active management. The BLM anticipates treating only 17% of this need.

The problem with the management of public lands under the Northwest Forest Plan is that forests are not being managed. Clearcutting old growth is not management; it's strip mining in the forest. Forest management involves manipulating vegetation to improve forest health, restore degraded landscapes and provide for sustainable human communities. Under the Northwest Forest Plan, federal land management agencies are devoting scarce fiscal and personnel resources to clearcutting older stands and meeting the legal requirements for this type of logging, including surveys for the rare species inhabiting these forests. These skewed priorities result in the agencies' inability to manage plantations.

ALTERNATIVES TO OLD GROWTH LOGGING

Today, seven years after implementation of the Northwest Forest Plan, policy makers have a choice. We can continue to operate in gridlock, moving from one crisis to another, or we can chart a new direction. There are alternatives to logging ancient forests that provide high quality jobs, produce wood fiber and protect the environment. We are requesting that the Senate act to re-orient the federal timber sale program from its reliance on clearcutting older stands to a forest restoration program, with a focus on recovering plantations. Treatments in plantations would be designed to accelerate the development of late-successional characteristics by increasing tree growth, stem diameter and introducing horizontal and vertical structural diversity.

Because there are hundreds of thousands of acres of plantations available for restoration silviculture, significant timber volume will be produced as a byproduct of thinning treatments. A restoration silviculture management strategy could potentially produce more wood fiber than is currently coming out of the gridlocked forests managed under the Northwest Forest Plan.

And there's much more to restoration than just silviculture. There is a huge need for projects that repair a crumbling road infrastructure, decommission unnecessary and environmentally destructive roads, improve stream habitat and stabilize slope failures, to name just a few stewardship opportunities. There is no shortage of high skill, family wage jobs that can be created with modest public investments in restoration management.

I believe this proposal will resolve much of the controversy that has surrounded implementation of the Northwest Forest Plan. It would improve forest health by protecting dwindling late-successional forests rich in biodiversity, accelerating the development of late-successional characteristics in tree plantations and reducing risk of fire, pests and disease. Most importantly, restoration silviculture, if conscientiously implemented, is likely to meet legal tests and avoid public controversy.

This proposal addresses deficiencies in the Northwest Forest Plan, but I am not suggesting that the Plan be abandoned. Indeed the foundation of the Plan's management strategy is the concept of "adaptive management." Adaptive management assumes that as we learn more about forest ecosystems and local communities, the Plan will integrate new strategies and techniques. I believe that it is time to update

the Northwest Forest Plan to reflect the best science, societal values and the restoration silviculture opportunities that are now available.

In addition to a change in forestry practices, we need a renewed commitment to quality employment and the integrity of rural communities. For too long the debate about the management of federal forests has been dominated by board feet figures and timber volume targets. These benchmarks do not address forest health, and they deal with the health of local communities indirectly at best. If quality employment and community stability is indeed an important goal of forest management, we should articulate these values clearly instead of remaining fixated on timber targets.

The first thing that the Senate can do is to fully fund existing Department of Agriculture and Interior community assistance programs, particularly the Forest Service's Pacific Northwest Assistance line item in its Cooperative Forestry budget. The Senate should explore a variety of avenues for delivering technical assistance, economic and infrastructure development grants, and other tools that leverage communities' economic transition.

As I said, I could talk about management of federal forests for days. Mostly I'd be telling you what's wrong with the Forest and BLM. But with my limited time I want to tell you about a success story. I strongly urge the committee to acquaint themselves with the work that's being done on the Siuslaw National Forest on Oregon's coast. The Siuslaw protects remaining older forests and emphasizes watershed restoration, with a variety of projects that include placement of in-stream habitat structures and commercial thinning of overstocked plantations. Although production of wood fiber is largely an incidental by-product of restoration efforts, the Siuslaw produces around 25 million board feet of timber annually, and has had great success marketing this timber to local mills. Even though the Siuslaw emphasizes restoration, and has a fraction of the timber budget of the industrial workhorses like the Gifford Pinchot, Willamette and Umpqua, they actually produce considerably more timber per acre than these forests. The Siuslaw is a forest that works.

I spent several days last week on a collaborative learning field trip on the Siuslaw with other conservationists, agency staff, and representatives from community economic development organizations, the timber industry, labor unions, county commissioners and watershed councils. To our surprise, we actually all got along pretty well. Mostly we agreed that there are huge opportunities for work on this Forest. And we heard from community members who are eager to take advantage of these employment opportunities. Unfortunately, there is currently neither the funding nor the political will to create these jobs.

The Siuslaw National Forest could be commercially thinning 5,000 acres of overstocked tree plantations annually. Currently their budget supports only 3,000 acres of thinning. They could be pre-commercially thinning 5,000 acres, but their budget currently supports a quarter of this need. They could be restoring 25 miles of streams annually, but can only afford to do a third of that work. They could be treating 175 miles of unstable roads, but, again, are only able to accomplish a third of that goal. Three million people could be enjoying 230 miles of trail, with a huge payoff to the local economy, yet the Forests' budget is only able to realize half of that potential. The communities near the Siuslaw National Forest need your leadership to protect ancient forests, restore watersheds and create jobs in the process.

Funding work like that which is being done on the Siuslaw National Forest is not welfare for watersheds. It's an investment in our future that will pay huge dividends down the road when we have clean drinking water, abundant salmon runs, a world-class tourism destination, healthy forests and healthy communities. For years we subsidized clearcutting of old growth forests because that type of logging built roads and schools and provided a way of life for the residents of our region. Today, logging doesn't drive our economy. The real engines of prosperity are high technology and service jobs. This new economy depends on the non-timber amenities provided by public lands. Times have changed a lot in our region. Government priorities need to change too. Ending old growth logging and investing in our forests is an idea whose time has come.

That concludes my prepared comments. I'd be happy to answer any questions from the committee.

Senator WYDEN. Thank you, Mr. Johnston. You know, as I listen to you—and think all of our witnesses have been very good today. We have had a spirited debate. You have come back to a point that I think cannot be emphasized enough, and that is that old-growth does not exist in a vacuum. It exists in the context of an overall

set of policies that make sense for the health of the forest. I think that it is very constructive that you are making that point, and I appreciate it and we are going to be working closely with you.

Mr. Daucsavage, usually I talk to you early in the morning when we were in a state of high peril and panic about some forestry policy. I am glad you are here today.

**STATEMENT OF BRUCE DAUCSAVAGE, PRESIDENT,
OCHOCO LUMBER COMPANY, PRINEVILLE, OR**

Mr. DAUCSAVAGE. Thank you very much for your invitation and good afternoon.

My name is Bruce Daucsavage and I am the president of Ochoco Lumber Company of Prineville, Oregon. Prineville is located in central Oregon. My testimony today also reflects the views of the American Forest Resource Council and its nearly 90 forest land owners and wood products manufacturers located in 12 States west of the Great Lakes. Our proud forest products industry has sales of over \$195 billion annually and employs 1.6 million people, making a significant contribution to our Nation's economy. Ochoco Lumber Company, the members of the AFRC, and the forest products industry are committed to sustainable forestry for all forest lands, public and private.

Today's hearing is about old-growth, a topic that has been studied and debated in the Pacific Northwest for a long time. I am not here to offer my definition of old-growth because I am not a scientist and I believe that it is virtually impossible to render a single comprehensive definition. But if I did give you a definition, I would describe it in today's environment as any tree of value that we are unable to harvest due to legal and government constraints.

What I am here to tell the subcommittee is about my company's experiences during the old-growth debate, the decisions we have made, the actions of others and ultimate consequences. The reality is that our mill is closed in Prineville and our forests are threatened with catastrophic wildfires while offshore forests are meeting a larger portion of the Nation's domestic wood products consumption.

Ochoco Lumber Company started in 1923 and we built our first sawmill in Oregon in 1938. Originally, our log supply came exclusively from private lands because we acquired the cutting rights to approximately 80,000 acres. The forests of central and eastern Oregon have been managed under a mixed-age scenario and harvest was done on a selected tree basis. The criteria for cutting the private land included removal of the dead, diseased, and the high risk trees.

In the 1970's, we experienced the wilderness debate, RARE I and RARE II assessments. During this period, timber sale projects that were planned for unroaded areas were put on hold. As a consequence, management was limited to those areas previously treated. Management objectives for these areas included improving forest health and reducing fuel loads. Prescriptions typically were removing larger and dead and dying trees and thinning overcrowded stands.

As the years passed, it became increasingly obvious that the direction the Forest Service was heading was to do more thinning of

smaller diameter classes, so in 1988 our company invested over \$15 million to build a small log mill to complement the original mill. To remain competitive we needed to adjust our sawmilling operations to more effectively manufacture the increased percentage of small logs from the surrounding national forests.

Our future at that time told us that long-term balance had been struck. The Forest Service had decades of thinning to do in conjunction with selectively harvesting large, high-risk trees. During this time, the door and window and molding manufacturers continued to demand the high quality boards of Ochoco Lumber, while we found new markets in the furniture and construction industries to utilize the narrow and the lower quality boards.

Currently, Ochoco Lumber has about 60,000 acres of our own private land and, although our sawmills are starved for the raw materials growing on them, we have remained good stewards of the land and only harvest what is sustainable on those lands. Our private timber lands only produce about 20 percent of our needs.

As I previously mentioned, on May 25, 2001, we made a difficult announcement that we were closing our Prineville operation. Prior to that time, Ochoco had employed 180 people with a payroll of nearly \$5 million. Contract loggers and truckers were paid an additional \$8 to \$10 million. The U.S. Treasury was receiving annual payments from us of about \$15 million for timber sales. Our operation's daily shipments of 10 to 15 rail cars of wood chips and lumber were instrumental in keeping the city of Prineville Railroad operating, since Ochoco Lumber accounted for approximately 40 percent of the shipments of this short line.

We have been committed to the community. We have scholarship programs for our college students of graduating seniors. In fact, 50 students currently go to college on our scholarships. So we felt we did everything right for the longevity of the company and the betterment of our community. We had dedicated, skilled employees and we made products demanded by consumers. We invested in our manufacturing facilities and forest land base and we supported our local communities.

But no one ever expected that our Federal Government would establish forest policies that made it impossible to continue operating a viable business. This first became apparent in 1990 when the forest plans were finalized, lowering the intended levels of timber from the surrounding national forests by roughly 30 percent.

The fact is that during the last 8 years our domestic dependency on foreign forests for lumber production has increased from 20 percent to almost 40 percent. Finally, with the collapse of the public timber sale program in our surrounding national forests and the resulting closure of sawmills, our customers have had to turn elsewhere for the products they need. Today, the secondary manufacturing located in Oregon is using pine products grown in Chile, Brazil, and New Zealand. These secondary manufacturers that depended on the quality lumber we once produced have begun building their own sawmills and secondary manufacturing facilities in countries where the resource is plentiful.

The science tells us that forests are dynamic and cannot be preserved in static condition. Making a decision to preserve or protect more acres by excluding some management decisions—we call

sound management forest practices taking care of the health of our forests.

But our rural communities and an important manufacturing sector of our economy has to be sustained with the help of our National Forest System. Let us provide the professional managers the tools they need to do what is right and not legislate a political solution that just makes the situation worse.

This concludes my prepared remarks.

[The prepared statement of Mr. Daucsavage follows:]

PREPARED STATEMENT OF BRUCE DAUCSAVAGE, PRESIDENT, OCHOCO LUMBER
COMPANY, PRINEVILLE, OR

Good afternoon Mr. Chairman. My name is Bruce Daucsavage and I am the President of Ochoco Lumber Company of Prineville, Oregon. My testimony today also reflects the views of the American Forest Resource Council and its nearly 90 forest landowners and wood product manufacturers located in twelve states west of the Great Lakes. Our proud forest products industry has sales of over \$195 billion annually and employs 1.6 million people, making a significant contribution to our nation's economy. Ochoco Lumber Company, the members of AFRC, and the forest products industry are committed to sustainable forestry for all forestlands, public and private.

Today's hearing is about old growth, a topic that has been studied and debated in the Pacific Northwest for a long time. I am not here to offer my definition of old growth because I am not a scientist and I believe that it is virtually impossible to render a single comprehensive definition. Just in my State of Oregon, there are at least a dozen forest ecosystem types, each of which should have their own definition for this ecological stage in the life of a forest. Unfortunately, in the public debate over forest management, the term old growth is regularly abused to define forests that environmental activists do not want to see managed.

What I am here to tell the subcommittee about, is my company's experiences during this old growth debate, the decisions we have made, the actions of others and the ultimate consequences. The reality is that our mill is closed and our forests are threatened with catastrophic wildfires, while offshore forests are meeting a larger proportion of our nation's domestic wood product consumption.

Ochoco Lumber Company started in 1923 and we built our first sawmill in Prineville, Oregon in 1938. Originally, our log supply came exclusively from private lands because we had acquired the cutting rights to approximately 80,000 acres. The forests of central and eastern Oregon have been managed under a mixed aged scenario and harvest was done on a selective tree basis. The criteria for cutting the private land included removal of the dead, diseased and high-risk trees.

Shortly before the end of World War II, the Forest Service began offering timber sales on the surrounding national forests. Since these forests were comprised of about 70 percent ponderosa pine, all of the sawmills in the Prineville area including Ochoco Lumber Company gained a reputation for producing quality ponderosa pine boards. Our motto was "quality pine is our line." Our operation stayed basically the same from the 1940's-1970's, which was operating a large-log sawmill producing high quality, select, moulding, and shop grade lumber.

In the late 1970's we experienced the Wilderness debate and the RARE I and II assessments. During this period, timber sale projects that were planned for unroaded areas were put on hold. As a consequence, management was limited to those areas previously treated. Management objectives for these areas included improving forest health and reducing fuel loads. Prescriptions typically were removing larger dead and dying trees and thinning overcrowded stands.

In response to these changing conditions, we installed new sawmill equipment in 1978 to better utilize the small logs being harvested from the national forests. These multi-million dollar improvements made it possible to continue to process large logs, but also efficiently handle the higher percentage of small logs. Ochoco's customers were still demanding the wide (10"-30") high quality boards for use in door and window plants, and in high-grade furniture. During this time we developed new markets for clear lumber selling to customers who were slicing this lumber into veneer to be used as overlays on engineered wood products. In addition we started marketing narrower boards (4"-8" wide) for non-appearance grade uses.

As the next few years passed, it became increasingly obvious that the direction the Forest Service was heading was to do more thinning in the smaller diameter classes, so in 1988 we invested \$15 million to build a small log sawmill to com-

pliment the original sawmill. To remain competitive, we needed to adjust our sawmilling operations to more efficiently manufacture the increased percentage of small logs from the surrounding national forests. Our forecast at the time told us that a long-term balance had been struck. The Forest Service had decades of thinnings to do in conjunction with selectively harvesting large high-risk trees.

During this time, the door, window and molding manufacturers continued to demand the high-quality pine boards from Ochoco Lumber Company, while we found new markets in the furniture and construction industries to utilize the narrower and lower quality boards that began to dominate our production. Also during this period we acquired more private timberland as an insurance policy. Currently, Ochoco Lumber Company has over 60,000 acres of private timberland, and although our sawmills are starved for the raw materials growing on them, we have remained good stewards of the land, only harvesting what is sustainable from those lands. Our private timberlands only produce about 20 percent of our needs, and we will not deplete and degrade our lands short term to supply our sawmills.

But as I mentioned previously, on May 25, 2001 we made a difficult announcement that we were closing our Prineville operations. Prior to that, Ochoco Lumber Company was employing 180 people with a payroll of nearly \$5 million. Contract loggers and truckers were paid an additional \$8 to \$10 million. The U.S. Treasury was receiving annual payments totaling about \$15 million for timber sales, which resulted in significant payment to the local counties. Our operation's daily shipments of 10-15 railroad cars of wood chips and lumber were instrumental in keeping the City of Prineville Railway operating since Ochoco Lumber Company accounted for approximately 40 percent of the shipments on this short line. Finally, Ochoco Lumber has proven itself to be a very civic-minded member of the community always willing to lend a hand or help support a good cause. An example of this is the Ochoco Lumber scholarships for graduating seniors and currently 50 college students are recipients of this program.

So we did everything right, just as an MBA student is taught. We had dedicated and skilled employees, made products demanded by consumers, invested in our manufacturing facilities and a forestland base, and supported our local community. But no one ever expected that our federal government would establish forest policies that made it impossible to continue operating a viable business.

This first became apparent in the early 1990's when forest plans were finalized lowering the intended levels of timber from the surrounding national forests by roughly 30 percent. Furthermore, the Forest Service failed to accomplish these reduced levels. With the listing of endangered species, interim guidelines were introduced that prohibited trees over 21 inches in diameter from being harvested. Additional riparian buffer widths were established and wildlife connectivity corridors were designated between large blocks of older forests.

Reductions in acres available for management and increased, and often questionable, restrictions on management are only part of the problem. In addition to these, the agency, reeling from administrative appeals and lawsuits, has become paralyzed by process. This process, intended to "bulletproof" agency decisions, has had detrimental effects. Now the agency spends obscene amounts of time and money on processes with no measurable benefits.

The fact is that during the last eight years, our domestic dependency on foreign forests for our lumber products increased from about 20 percent to over 40 percent. Finally, with the collapse of the public timber sale program on our surrounding national forests and the resulting closure of sawmills, our customers have had to turn elsewhere for the products they need. As I mentioned earlier, some of our largest customers were the secondary manufacturers that produce doors, windows and molding. When we were no longer able to provide them with the size and quality of pine products they needed, they went offshore for suppliers.

Today, the secondary manufacturers located in Oregon are using pine products grown and milled in Chile, Brazil, and New Zealand. These secondary manufacturers that depended on the quality lumber we once produced have begun building their own sawmills and secondary manufacturing facilities in countries where the resource is plentiful, and where the forest products industry is welcome. Not only are we losing local jobs, but also exporting our knowledge, equipment, and financial strength.

Equally disturbing is the fact that our country has some of the most productive forests of any in the world and some of the most comprehensive environmental laws and regulations. The reality is that during the last eight years, our nation's dependency on foreign forests for our lumber products increased from about 20 percent to over 40 percent. Our failed federal forest policy has moved our demand offshore to forests ecosystems where environmental safeguards are cursory concerns.

CONCLUSION

Mr. Chairman, I cannot overemphasize the fact that our company and industry is dedicated to the long-term sustainability of all forestlands. Certainly our business' future requires maintaining the productivity of federal and non-federal lands. We are also committed to help the agencies as a partner to implement projects, designed to meet resource objectives. But we cannot do it without economically viable projects that allow companies like Ochoco Lumber Company to stay in business—contributing to the management of forest ecosystems, producing products demanded by consumers and providing economic stability to our rural communities. Our federal forest policies must involve the local communities and industry if they are to be successful.

Any attempt to protect or preserve older forests is doomed to failure. History has shown, with efforts such as the Northwest Forest Plan, the Interior Columbia Basin Ecosystem Management Project, and the Sierra Nevada Framework, that these forests are continually changing and must be managed to avoid undue risk of insect and disease infestations and catastrophic wildfires. This is particularly true in the forests of the interior West. We know that today's forest health problems stem from past management including fire suppression. For these forests this has led to unnatural conditions of overstocked stands and an overabundance of species that are more susceptible to insects and disease.

The science tells us that forests are dynamic and can't be preserved in a static condition. Making a decision to preserve or protect more acres by excluding sound forest management not only seals the fate of the forest, but our rural communities and an important manufacturing sector of our economy. Let's provide the professional managers the tools they need to do what is right and not legislate a political solution that just makes the situation worse.

This concludes my prepared remarks, I would be glad to answer any questions you or the subcommittee may have for me regarding this important issue.

Senator WYDEN. Bruce, thank you for excellent remarks. Let me tell you, I am very proud of the way you all conduct your business in rural Oregon. I think, like Jim Johnston, you bring a sense of willingness to work with people and find the kind of common ground. I want you to know that I am going to continue to do everything I can to shake some Federal timber land loose for you so that you can get up and running again. As you know, David Blair in our central Oregon office and Sarah, who is here, have been having these discussions with the forestry officials, and clearly we have got to get some buy-in at the local level to give you all the assurance that it is not going to be just another lawyers full employment program and everybody is going to run off and sue each other.

But I just want you to know that I think you have shown your willingness to manage forests for the future in the spirit that Jim was talking about, in a sustainable way. That is what you have done with your private lands. That is how you have gone about it with your private lands. We have got to stay on it until we shake some Federal timber free for you. I am just frustrated that I cannot snap my fingers and through a combination of an aggressive thinning program and some other steps get it going.

But a big focus of what I am trying to do here is this. I have seen what you all are trying to go through at Ochoco. I thank you for a very thoughtful presentation. I will have some questions in a moment, but you and Jim I think in terms of bookends representing an environmental and industry position, make Oregon proud by coming here and showing that you are willing to reach out and meet people halfway to come up with an approach here that makes sense for the future. I thank you for it.

Senator Torgerson, welcome. I already told your Senator, Senator Murkowski, that I am going to work very closely with him on this.

I know you all have some special situations up there with respect to the second growth and the like, and just as you begin your testimony please know that Senator Murkowski has made me aware of that situation and we are anxious to be responsive to you.

Maybe we could do something where we can take some steps that will be useful to you up in Alaska and you can help us on some things for the other States and find some common ground.

Please proceed.

**STATEMENT OF JOHN TORGERSON, ALASKA STATE SENATOR
AND CHAIRMAN, COMMITTEE ON NATURAL RESOURCES,
ALASKA STATE SENATE**

Mr. TORGERSON. Thank you, Mr. Chairman. I know Senator Murkowski is a great advocate for us being treated fairly by the Forest Service.

Senator WYDEN. He is indeed.

Mr. TORGERSON. My name is John Torgerson, for the record. I chair the Senate Resources Committee for the Alaska State Legislature. I am also a former director of the Alaska Forest Association, called AFA, and at that time it was known as the Alaska Loggers Association. I began working and logging in the coastal forests of Alaska in 1970, so I am familiar with forest issues in the State both through my own participation and through my oversight and my Senate responsibilities.

At the request of George Woodbury, the current president of the AFA, I am here today to offer his testimony on behalf of the association. The AFA represents approximately 80 regular and 120 associate member companies doing business in the forest products industry throughout Alaska. Nearly all the AFA's regular members are small business firms as defined by the Small Business Administration and qualify for independent and small business set-aside timber sales.

The AFA, its members, their employees, and timber-dependent communities of Southeast Alaska depend on the Forest Service to provide economic timber sales of significant volume to meet the needs of the Southeast Alaska timber industry. In Alaska, old-growth forests are the lifeblood of the timber industry. The national forests are the only source of raw materials for the Alaska sawmills and veneer plants. All the timber from the Alaska national forest is old-growth.

The industry is only 50 years old and therefore adequate second growth opportunities for raw material supply have not yet developed. In order to maintain the industry, harvest must continue in the old-growth until a second growth supply is available. The time that it takes to develop an adequate supply of second growth will depend on the way the old-growth is managed and on the degree and type of management performed on second growth stands.

For the first 35 to 40 years, timber management was conducted using an even-aged clearcutting management prescription. This has resulted in healthy and vigorous second growth stands. Some of the second growth is ready for commercial thinning, but more if it is in need of pre-commercial thinning.

For the last 10 years, the forests have been managed under an experimental management scheme designed around alternatives

the clearcut. The effects of the new management scheme is yet undetermined, but concerns remain about stand composition and overall forest health implications of these alternative approaches. What we already know is that the alternatives have significantly hampered the economics of the timber sale offerings.

Preliminary indications are that these new methods will provide growth rates better than the zero growth rates in uncut stands, but growth rates are inferior to clearcut stands. We are concerned that the trees left uncut will infect the second growth with disease, dwarf mistletoe being a primary problem in our hemlock stands. The alleged benefits are based on visual concerns and speculative benefits to wildlife.

The need to apply these alternative measures in areas available for timber harvest in the face of the millions of old-growth acres where no timber harvest is allowed is not evident. In addition, the steep uneven terrain in Alaska makes working in partial clearcuts inherently unsafe for our workers.

There has been large areas set aside in Alaska's Tongass National Forest that are managed under single use prescription—wilderness, back country recreation, and other prescriptions that forbid any timber harvest or multiple uses. These withdrawn areas have reduced the acreage available for timber production to about 676,000 acres, of which about 250,000 acres are in second growth condition. This leaves about 12 percent of the productive old-growth from the Tongass for timber harvest, only about 4 percent of the Tongass.

The Tongass is managed under an old-growth conservation strategy which is part of the Forest Service plan. This strategy includes reservation of 3.5 million acres of the 5 million acres of productive old-growth. This is not a reservation of rock and ice; it is a prohibition of timber harvest on timber-producing sites. In addition, there are another 4.2 million acres in unproductive old-growth available for wildlife habitat.

Any prescription that reduces the yield potential of the acreage available for timber production puts more pressure on the reserve acres and controversies that result in costly and nonproductive expenditures on environmental lawsuits.

There is other evidence that shows that the second growth stands resulting from clearcuts can be managed to provide wildlife habitat and still produce a viable timber industry. It is crucial to the future of Alaska's timber industry that a reliable source of economic timber is available, is provided from our areas of the forest that are available for timber harvest. These areas must be managed under prescriptions that make it clear that timber harvest is the primary use.

The Forest Service needs to remove prescriptions that provide the basis for environmental lawsuits. Using the already existing second growth potential in conjunction with the designated acreage of old-growth that will be available on a reliable economic basis until the industry can sustain on second growth is the answer to Alaska's old-growth controversy.

With that, Mr. Chairman, that concludes my remarks. Thank you for the opportunity.

Senator WYDEN. Thank you very much, Senator. Again, we are going to be very anxious to work with you in Alaska and recognize that there are very different circumstances. Senator Murkowski has already given me a couple of really good ideas that track what you have been saying, and that is very constructive.

Let me ask a question of our sort of whole panel. I think you have heard me say that what I would like to do is to focus on a fundamental proposition. That is to see if we can marry together the idea of additional protection for old-growth with the kind of thinning and other active management practices that people in resource-dependent communities would see as constructive and give them a chance to get fiber in their mills and put people to work.

If one were to talk about an integrated forest management plan built on sort of those two key precepts, why don't each one of you tell me what you think the key features of such an integrated management plan would be? Just kind of tick off some of the key features of an integrated management plan that was built on those sort of two ideas I am talking about.

Mr. Palola.

Mr. PALOLA. Yes, thank you. I can give you a couple of indications of where I know some of the best forest managers in our region, what they are doing already. One is they are cutting less than their annual growth. They are essentially designating an increment of the forest productivity to long-term, you can call it a reserve or a biodiversity increment or an old-growth increment, but they are not red-lining their forest, so to speak.

A high degree of snag retention and some of the other characteristics that Dr. Lewis talked about earlier this afternoon. They are looking to recruit those particular attributes back into their forests.

I would also say that some of the nuances of this are also bound up in the kinds of relationships that they have with people, with forest workers, particularly loggers, in terms of how they specify timber sale contracts and their expectations for the quality of the work that is being done. I could provide some more specifics on that later on.

Senator WYDEN. Good suggestions.

Mr. Johnston.

Mr. JOHNSTON. Well, I could certainly address myself to ecological standards that the conservation community would like to see incorporated into such a plan. Sticking out among them would be protection of native forests that provide important ecological functions and a restoration focus with silviculture, projects that genuinely are designed to make the forest healthier, most particularly thinning of these dense tree farms.

But I am not going to do that. Instead, I will actually address myself to the issue of jobs and community stability in designing such a plan. I would suggest that we are going about this the wrong way by remaining fixated on timber targets. Timber targets certainly do not address the health of the forest and they only address rural community stability and jobs indirectly.

If one of the goals of such a plan of forest management is to be good jobs, healthy communities, then let us make that a goal. Let us not make timber targets a goal or production of wood fiber a goal, although certainly I think there will be production of wood

fiber. If we are serious about jobs, then let us set targets that reflect that value.

Senator WYDEN. Good point.

Bruce.

Mr. DAUCSAVAGE. For us in the industry, especially in central Oregon, the issue is forest health. We believe, given the ability to manage the forests with economically viable timber sales, in other words sales that work, there is—we can sustain a long-term timber sale program and create what you are looking for, I think, in the way of the old-growth type forest.

If you have a healthy forest, that means you are going to have larger trees. We believe also there are cases where you need to take some of the larger trees. We certainly do not need someone to tell us that 21 inches and larger is the right size, because it is not.

I have timber sales here in front of me that we cannot bid on from a fire. They have been on the ground for a year. These are not and wilderness areas, they are in management areas, and we cannot harvest those trees and we have to shut down a sawmill.

So I think the key here is forest health and that in itself will create the type of environment I think you are looking for.

Senator WYDEN. Know that we are going to continue to try to help you get that dead and dying material off the forest floor. I think we can do it in line with the environmental laws and in a way that promotes sustainable forestry.

Mr. Torgerson.

Mr. TORGERSON. Thank you, Mr. Chairman. As I said in my testimony, Alaska is basically dependent upon old-growth currently. But we need some commercial pre-thinning in our old-growth areas that are basically—not the old-growth, but in the second growth areas. It was interesting that the other panelists mentioned the health of the forest. Up in the area that I currently live, the collective governments have ignored the Borealis Forest up there and we now have an epidemic of dead trees. We have loved that forest to death. Approximately 1.2 million acres out of 1.3 million acres of commercial timber is dead and it is past the point now or almost past the point now where we can harvest it.

The Forest Service in one area, they prescribed a timber sale and, because of the opposition to logging, they decided to go in there and burn it. That was the one of our fires that was out of control in the Nation last year. So I would like to see them put together a better plan than using burning as a way of managing the forests.

Senator WYDEN. Senator Murkowski, I know, is very concerned about the white spruce climax forests up in your area that are suffering from the beetle infestation and very high risks, and I know that he would be very interested in making sure that the committee has your thoughts on the management of those lands and sort of how there is an interaction there to the old-growth.

Mr. TORGERSON. Well, Mr. Chairman, thank you. That is what I was just talking about. Really, the trees are all dead now. The old-growth, some of it is standing, some of it is being blown over.

Senator WYDEN. Maybe I missed the point and, Senator, you can correct me. I thought you had been talking mostly about the coastal forests.

Mr. TORGERSON. I have been.

Senator WYDEN. Oh, I see. Up until now you were talking about the coastal forests and that is hemlock and sitka spruce, and now we are moving over to the white spruce forest?

Mr. TORGERSON. In the testimony earlier than this, I split it. I was talking some about the old-growth and the need for pre-commercial thinning in the second growth areas down in southeast Alaska, and then I jumped ahead to the white spruce, which are our forests around where I live. I cannot add much more to it. It has not been managed. We have had commercial operations come in the look at removing it and basically they went broke, not having timber supply. So it has been very—I have sat and watched this forever and it is disheartening to see that.

No matter if you are environmentalists or preservations or a logger, that is a wasted forest totally.

Senator WYDEN. It seems to me that the point that you and Senator Murkowski are making in this area is very valid, and we are going to follow it up and check it out for you.

Mr. TORGERSON. Yes, sir, thank you.

Senator WYDEN. I am going to recognize the minority counsel for some questions, minority staff from some questions here in a minute. But the reason I asked the question is that I think there are some ways that this panel, which reflects sort of a cross-section of opinion in terms of industry and environment and certainly points of view that could be contentious and have been contentious, can find some common ground.

Mr. Johnston talked about jobs and thinning. Mr. Daucsavage talked about sustainability. You had an East Coast perspective that made sense, and Mr. Torgerson was talking about thinning in areas that I am certainly convinced we should have been working on quite some time ago. So now it is the job of the Congress to work with these agencies to try to build on your goodwill and desire to actually move forward and manage these resources so that all Americans can say that we have tapped every opportunity to make sure that these special places are to the benefit of all.

So I thank you for how constructive you have been.

Frank, why don't you just come on up and ask the questions you would like to get into.

Mr. GLADICS. Thank you, Senator. I will be mercifully short.

As we have looked at this issue—and Senator Wyden, I appreciate your willingness to look at thinning in some areas that we have not been able to thin in, and I think that is a huge step forward. And I appreciate the witnesses' apparent willingness to look at that. The Northwest Forest Plan was a balance both politically and ecologically. It involved thinning in younger stands, harvesting in old-growth stands, and trying to come up with a solution that would fit most people. It has not worked out.

Mr. Johnston, you have said that you want to not harvest any old-growth trees, right?

Mr. JOHNSTON. You also want to go into thinning. Balance-wise, there is going to be a change in the amount of total volume that

might be available and the economic stability. We will see some more changes in economic stability with that. I am wondering, if Congress were to direct the Forest Service to reopen that plan and look at it, would you perceive a re-look at the number of acres that are in Matrix land versus LSR versus set-asides?

Mr. JOHNSTON. Well, first of all, I do not think that the Northwest Forest Plan is broken. I think that it is based on sound science and serves as a framework from which we can move forward. If there is anything wrong with the Northwest Forest Plan, I would say that it has not adapted as well as it can. The plan's foundation is this concept of adaptive management. We take new societal priorities, new information, and we adapt the plan to those circumstances. I think that is what needs to be done in terms of old-growth protection.

Specifically, in terms of your question, would we support changing boundaries or adding or subtracting from the Matrix or other land allocations, again I think that the science supports large blocks of reserved habitat in terms of recovering species like the northern spotted owl, and I think that that should be maintained.

What we could support is restoration silviculture in these tree farms to accelerate the development of late successional characteristics. We are talking about the Forest Service doing business differently, because currently most of their focus is on logging on older stands. There is lots of different mechanisms and vehicles to accomplish this. I think Congressman DeFazio earlier today brought up what I think is one of the best ones, which is to separate that restoration work from market pressures by contracting with companies to do that restoration work, that plantation recovery and that thinning, and the Forest Service selling those logs from public sort yards. I would certainly urge the committee to look into that.

Mr. GLADICS. So, looking for common ground here, if the science led us to going back into some areas that are reserved because values are protected, yet they could do some management, you folks would look at that in the long run?

Mr. JOHNSTON. Certainly, if the science supports restoration silviculture as I have described it, I would support it, and I do not think that there is anything in the plan currently that would prohibit it. For instance, the plan sets aside late successional reserves, but the plan allows thinning in those reserves currently. So I do not even know that we would need to adapt the plan in that sense.

Mostly what we are up against is the question of policy direction and funding. The agency's budget structure and personnel structure leads it to emphasize logging older stands, and the direction that it has received of Congress, I think, at this point has interpreted the Northwest Forest Plan to mean get in there and log old-growth. Certainly I would like to see Congress give new signals to the agency, that instead the emphasis should be on restoration work, thinning in tree farms perhaps, and at that point I do not think that you would need to draw new lines on the map or anything like that.

Mr. GLADICS. One quick last question. Has your organization actively been involved in the NEPA process on some of the thinning

in the LSR's that have been proposed, and have you supported or opposed individual projects?

Mr. JOHNSTON. We are actively involved in the NEPA process for quite a few timber sales in western Oregon, including thinning in late successional reserves. We have participated in that process. We have commented. For the most part I think that those projects, my organization feels that those projects have merit. We do not object to most of them as we have seen them on the ground.

We have suggested ways that they could be improved, some of which have been incorporated. In fact, a lot of late successional reserves thinning that is being done on forests like Siuslaw National Forest, I think that they are doing a really good job.

Mr. GLADICS. Thank you.

Mr. Palola, ice storms and wind are a major change agent in the Northeast and as we begin to try to develop these old-growth stands those events continue to occur. Have you got some thoughts on how we can develop a policy that would allow us to deal with those kind of events and do what is good for the land, as well as the communities?

Mr. PALOLA. That is a great question. I think we have to accept that those events are going to happen, number one. There is some concern that they are happening with more frequency because of the effects of climate change, although it is very hard to pin down what causes what. We are certainly seeing more droughty, more freezing and thawing conditions than historical records seem to have supported.

I think that the forest community has responded to these in a very responsible way by and large. We have not had the kind of controversies around salvage sales, for example, from major wind-throw events or fire events that have taken place in the West.

I think that I would come back to some of the basic premise of my testimony, which is that if we can prevent forest fragmentation and enhance forest security then people are going to be in a better position to ride out these sorts of disruptions, whether they are stand-replacing events or whether they are more minor kinds of things, which we see quite frequently.

I talked earlier about legacy trees as being a kind of a proxy or a halfway house to get you to more complete old-growth conditions. One of the biggest threats to relying on that as a strategy and why I call it a second best strategy is that those kinds of kind of ecological hazards—and in our region wind-throw, hurricane event, is the major problem. You can very quickly eliminate the remnant stands that you have or the remnant legacy trees, and that is a risk that many forest managers run who are trying to actively promote and maintain old-growth characteristics.

Mr. GLADICS. Thank you.

Senator Torgerson, you mentioned both commercial and pre-commercial thinning and the position of the Alaska Forestry Association. Is there more money needed in Alaska to help do that, through the agencies?

Mr. TORGERSON. Through the agencies? I believe there is, particularly in the second growth. As I testified earlier, we have not done any thinning or pre-commercial thinning in that second growth. It could be considered like a business, that you have to

make an investment, you have to go in and take care of your product, you have to go in and take care of your stock or your shelf life of things. If you ignore it, you end up with less value and in this case less commercial forest.

So it would be important for the Forest Service to go in and start actively managing those forests.

Mr. GLADICS. Thank you.

Bruce, one quick question for you. You have been through a rather traumatic experience with what you have done, all the things you have done in your mill. If there were one thing that you look back on in the last 15 years that could have changed things, is there something that sticks out in your mind, or is this really a series of problems stacked up on one another that we have not dealt with and need to unravel a large ball of string instead of one knot?

Mr. DAUCSAVAGE. Well, I think Sally Collins' testimony this morning was excellent in that it described some of the things that she had done in central Oregon when she was there. To our chagrin, we do not know why the thinning projects, the forest health issues, have been dropped or timber sales have not been put up that are viable, in other words economically viable.

The fact that they have stopped and the fact that we have this 21-inch or greater DBH limit on harvesting timber has changed the overall makeup of what we are capable of doing. I think with that screening process that was put in place, we are not subject to the Northwest Forest Plan, but the screening process, along with the stopping of the forest health restoration that we had done in the past, is probably one of the issues that have bothered us the most.

We do have some projects that we have done in the past, in particular the Trout Creek sales projects, where it involved entering a watershed of 15,000 acres with numerous timber sales, where we restored that particular part of the forest. It was very successful. We do not need more demonstration projects. We have demonstrated that this can work and we have this mixed conifer forest that is very healthy now, and I think this is something we should all take a look at and continue to operate under that scenario.

Mr. GLADICS. Thank you.

Senator WYDEN. Frank, thank you.

Let me leave it this way. 3½ hours ago, we started this discussion of how we could protect old-growth, have active management, and promote forest health. I was convinced it was doable then. I will tell you, I am more convinced now as I wrap up this hearing with a panel of environmental and industry representatives.

What it is going to come down to is what I think Senator Craig and I thought broke upon this county payments bill last session. Everybody said it could not be done, things were just too polarized. One side said sever the link between the counties and the Federal Government and just send the rural communities a check, and another said, well, let us use this legislation to go out and settle every grievance when you did not think the cut was high enough.

Senator Craig and I said we were not going to do it that way. What we were able to do there by lowering the decibel level was make it possible for a number of rural communities in our country to survive. Now, we have a lot more to do.

Bruce, your point about getting dead and dying material off the floor of the forest is to me just patently obvious, patently obvious from a forest health standpoint, patently obvious from the standpoint of the economic needs of rural communities. Jim Johnston, to his credit, has said he and his organization are willing to work on that and willing to work to try to provide the jobs that are a lifeline for rural areas.

So please know that we are going to keep the record open. I guess we will keep the record open for, I think the rule is, 2 weeks. Your additional comments will be welcome, as those of other citizens.

I thank you very much for your patience, and know that we are going to pursue this topic very, very aggressively. This debate has been too polarized for too long. Too many communities have suffered as a result. Too many treasures have been lost as a result, and there has not been enough active, integrated management of our forests that is clearly in the interest of all Americans, and we are going to try and change it. You all have helped us get off to a good start.

With that, the subcommittee is adjourned.

[Whereupon, at 6:07 p.m., the hearing was adjourned.]

[Subsequent to the hearing, the following statement was received for the record:]

STATEMENT OF DAVID PERRY, PROFESSOR (EMERITUS) OF ECOSYSTEM STUDIES AND ECOSYSTEM MANAGEMENT, DEPARTMENT OF FOREST SCIENCE, OREGON STATE UNIVERSITY

Mr. Chairman and members of the committee, thank you for this opportunity to present some brief thoughts on old-growth forests. I apologize for being unable to do this in person.

My name is David Perry. I am Professor (emeritus) of Ecosystem Studies and Ecosystem Management, Dept. of Forest Science, Oregon State University, and Affiliate Professor in the College of Agriculture, Forestry, and Natural Resources, University of Hawai'i at Hilo. I am a past member of the National Research Council's Committee on Environmental Issues in Pacific Northwest Forestry, the Eastside Forests Scientific Societies Panel, and the old-growth expert panel convened to advise the scientists formulating the Pacific Northwest Plan. I currently sit on the Marbled Murrelet Recovery Team and The National Commission for the Science of Sustainable Forestry. I am author of the textbook, *Forest Ecosystems*, lead editor of *Maintaining Long-term Productivity in Pacific Northwest Ecosystems*, and author or co-author of numerous publications having to do with the ecology and management of ecosystems and landscapes.

My comments will be restricted to the area in which I have the greatest familiarity, which is the Pacific Northwest, both east and west of the crest of the Cascades.

Echoing the recommendation of the NRC Committee on Environmental Issues in Pacific Northwest Forests, I support extending protection to all old-growth forests on federal lands within the Pacific Northwest. In my view, and that of the NRC Committee, keeping all that remains offers the best chance of maintaining native biological diversity on public lands. I believe the economic and social situation has changed sufficiently since the early 1990's to allow protecting all old-growth without creating undue economic hardship. In fact, with a shift in harvesting strategy (which I'll discuss further below), remaining old growth might be protected with little or perhaps even no economic impact.

Four facts about old-growth forests seem beyond dispute: (1) They have been logged to levels far below historic range of variability both east and west of the Cascades crest; (2) they are ecologically unique, containing structures, species and species assemblages that occur in low abundance or not at all in most young, managed forests; (3) on a per acre basis they are worth a lot of money; (4) for many people, they embody core values that transcend the marketplace. As you are well aware, the issue for over four decades, not only here but in many places throughout the

world, has been finding a proper balance between the latter three. In the United States, the search for balance plays out in the context of the first: the current rarity of old-growth forests compared to historic norms.

My recommendation, and that of the NRC committee of which I was a member, reflects the belief that, once the extent of a given habitat has been sharply reduced, as is the case with old-growth forests, further reductions significantly increase the risk of extinctions. In fact, models predict the existence of thresholds, in which small changes in habitat can have large effects on species viability, and delayed effects—what David Tilman and colleagues have termed the “extinction debt”. I emphasize these beliefs and models exist within a background of large uncertainty—we are in new territory here, and the territory is exceedingly complex. But on that score the principles of conservation science are no different than those of prudent investing: in the face of uncertainty, don’t take unnecessary risks. So, as I see it, the question of how much old growth to protect turns not so much on science as on balancing the risks of extinction and diminishment of esthetic and spiritual values against the needs of the economy. I believe that equation has changed over the past decade.

In the Pacific Northwest of 10 years ago, the search for balance between conservation and economics required leaving some of the remaining old growth open to logging. At least two things have changed, however, which argue that risk is no longer necessary. First, the economy of the Northwest has diversified, and the lumber industry, while still important in some areas, is a minor component of the overall regional economy. Moreover, the lumber industry depends much less on federal logs than previously. By the late 1990’s, only 5 of 130 sawmills in western Oregon and Washington used federal logs for more than one-third of their total supply.

The second change has been a growing awareness on the part of scientists and foresters of the largely untapped potential for producing logs through thinning plantations (generally less than 80 years old). Done correctly, this time-honored silvicultural practice not only produces logs, but diversifies stands and increases the vigor of residual trees. According to a report by the U.S. Forest Service, approximately 400,000 acres of young stands are in need of treatment annually on federal lands in Oregon and Washington west of the Cascades, and only 15% are getting it. By my rough, but reasonable, back-of-the-envelope calculations, annual wood volume attainable by thinning plantations in western Oregon and Washington more than compensates for those that would come from liquidating unprotected west-side old growth over a 10-year period. This is true even with the so-called “variable density” thinning (not all areas thinned equally), which is increasingly recommended as an ecologically sound approach.

There is an issue regarding thinning in the dry forest types that needs mentioning. Numerous scientists and foresters have argued that forests in the dry portions of the region are currently overstocked with trees established during the past 100 years of fire exclusion, a situation that has increased susceptibility to crown fires and insect infestations. I agree, with the proviso this does not necessarily apply to every dry forest, but it certainly does to many. In recommending protection for remaining old growth, I am not asking that the door be shut on thinnings aimed at restoring health of older stands—that would be a mistake in my opinion. However, in logging for forest health, it is important that we don’t trade one set of problems for another. Elsewhere, I have recommended the following guidelines: (1) thin from “below”, i.e., leave the larger, older trees; (2) don’t build new roads; (3) treat thinning slash (otherwise it creates a high fire hazard); (4) protect soils and streams.

In closing, I’d like to take off my scientist’s hat and relate a recent, personal experience. On Sept. 14, I took a class into an old-growth forest in the western Cascades. Like many others, I think we were all still in shock from the events of the past Tuesday. Vigils of prayer and remembrance had been scheduled across the country on that day, and some of the students asked if we could take time out so that each could participate in whatever way they were called. I thought it was a fine idea, and at the appointed time we fanned out to find our own places of solitude. I sat with my back nestled into an old tree, 7 feet in diameter, 30 stories high, and looked out over a stream. Unbidden, there came to my mind Wendell Berry’s poem, the Peace of Wild Things, which begins

*When despair for the world grows in me
And I wake in the night at the least sound
In fear of what my life and my children’s lives may be,
I go and lie down where the wood drake
Rests in his beauty on the water, and the great heron feed.
I come into the peace of wild things . . .*

Why do a large majority of people in the Pacific Northwest, urban and rural, favor protecting old growth forests? I can't answer that, but suspect a large part of the reason is that the old forests embody qualities we need very much in today's world: strength, endurance, tranquility, peace.

